

**UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN**

NALCO COMPANY LLC, ECOLAB INC.,
HAZELMERE RESEARCH LTD., ECOLAB
USA INC., NALCO HOLDING COMPANY,
NALCO U.S. 2 INC. AND MOBOTEC AB,
LLC

Plaintiff,

v.

WISCONSIN PUBLIC SERVICE
CORPORATION d/b/a WESTON POWER
PLANT (UNIT 3), AND ARBOR FUELS
COMPANY LLC

Defendant.

Civil Action No.: 3:18-cv-279

FILED UNDER SEAL

NALCO COMPANY LLC, ECOLAB INC.,
HAZELMERE RESEARCH LTD., ECOLAB
USA INC., NALCO HOLDING COMPANY,
NALCO U.S. 2 INC., AND MOBOTEC AB,
LLC

Plaintiff,

v.

WISCONSIN POWER AND LIGHT
COMPANY, WISCONSIN PUBLIC
SERVICE CORPORATION, AND
MADISON GAS AND ELECTRIC
COMPANY, d/b/a COLUMBIA ENERGY
CENTER (UNIT 1), AND PORTAGE FUELS
COMPANY LLC

Defendant.

Civil Action No.: 3:18-cv-280

FILED UNDER SEAL


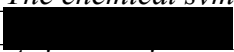
**DEFENDANTS' REPLY TO PLAINTIFFS' RESPONSE TO
DEFENDANTS' PROPOSED FINDINGS OF FACTS**

I. FREQUENTLY USED TERMS

1. The below table lists terms frequently used in Defendants' Motions for Summary Judgment and supporting documents, along with each term's definition for purposes of these Motions.

Term	Definition
'692 Patent	U.S. Patent No. 6,808,692 to Oehr
'235 Patent	U.S. Patent No. 6,250,235 to Oehr
'282 Patent	U.S. Patent No. 5,817,282 to Oehr
'548 Patent	U.S. Patent No. 8,142,548 to Oehr
'803 Patent	U.S. Patent No. 5,458,803 to Oehr
'805 Patent	U.S. Patent No. 5,645,805 to Oehr
279 Case	Nalco Co. v. Wis. Pub. Serv. Corp., No. 3:18-cv-279 (W.D. Wis.)
280 Case	Nalco Co. v. Wis. Power & Light Co., No. 3:18-cv-280 (W.D. Wis.)
AECS	Alliant Energy Corporate Services, Inc.
AJG Coal	Arthur J. Gallagher Coal, Inc.
[REDACTED]	[REDACTED]
Arbor	Defendant Arbor Fuels Company, LLC
Asserted Claims	Claims 1, 8–19, and 22–29 of the '692 Patent
CaBr ₂	The chemical symbol for calcium bromide
Chem-Mod	Non-party Chem-Mod LLC
Chem-Mod Case	Nalco Co. v. Chem-Mod LLC, et al., No. 1:14-cv-2510 (N.D. Ill.), filed on April 8, 2014
Chem-Mod Solution	Chem-Mod's method for treating coal, usually comprising the addition of MerSorb and S-Sorb to coal prior to combustion
[REDACTED]	[REDACTED]
Defendants' construction (or variations of that phrase)	The proposed construction of terms from the '692 Patent offered by Defendants in the parties' Amended Joint Table of Terms Requiring Construction, filed at D.I. #82. ¹
Gallagher Clean Energy	Gallagher Clean Energy, LLC
[REDACTED]	[REDACTED]
Hazelmere	Plaintiff Hazelmere Research Ltd.
Hg	The chemical symbol for mercury
MerControl 7895	The aqueous mixture of calcium bromide and water marketed by Nalco
MerSorb	The aqueous mixture of calcium bromide and water used as part of the Chem-Mod Solution
MGE	Defendant Madison Gas and Electric Company
Nalco	Plaintiff Nalco Company LLC
NMI	Nalco Mobotec, Inc., Nalco's predecessor in interest
[REDACTED]	[REDACTED]
NO _x	The chemical symbol for nitrogen oxides

¹ Unless otherwise noted, citations to the docket refer to Case No. 3:18-cv-279. When specific circumstances require citation to the docket for Case No. 3:18-cv-280, the citation is identified as "Case 280, D.I. # [number]."

Term	Definition
<i>Plaintiffs' construction (or variations of that phrase)</i>	<i>The proposed construction of terms from the '692 Patent offered by Plaintiffs in the parties' Amended Joint Table of Terms Requiring Construction, filed at D.I. # 82</i>
<i>Portage</i>	<i>Defendant Portage Fuels Company, LLC</i>
<i>POSA</i>	<i>A person of ordinary skill in the relevant art</i>
<i>Refined Coal</i>	<i>Coal treated according to the Chem-Mod Solution</i>
<i>SAC</i>	<i>Plaintiffs' Second Amended Complaint in the 279 and 280 Cases</i>
<i>Section 45</i>	<i>26 U.S.C. § 45</i>
<i>SOx</i>	<i>The chemical symbol for sulfur oxides</i>
	
<i>S-Sorb</i>	<i>A dry powder sorbent used as part of the Chem-Mod Solution</i>
<i>WPS</i>	<i>Defendant Wisconsin Public Service Corporation</i>
<i>WPL</i>	<i>Defendant Wisconsin Power and Light Company</i>
<i>2004 Statute</i>	<i>The American Jobs Creation Act of 2004, PL 108-357, 118 Stat. 1552 (Oct. 22, 2004)</i>
<i>2008 Statute</i>	<i>The Emergency Economic Stabilization Act of 2008, PL 110-343, 122 Stat. 3808 (Oct. 3, 2008)</i>
<i>2010 Statute</i>	<i>The Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, PL 111-312, 124 Stat. 3297 (Dec. 17, 2010)</i>

Pl. Response: Undisputed.

Def. Reply: Undisputed.

II. PLAINTIFFS

A. Hazelmere

2. *Plaintiff Hazelmere alleges that it is a Canadian company with its principal place of business at 1940 180 St., Surrey, BC V3S 9V2, Canada.*

D.I. # 35, Second Amended Complaint ("SAC") ¶ 10; D.I. # 49, Answer to SAC ¶ 10.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

3. *Hazelmere is the reported owner of the patent in suit, the '692 Patent.*

D.I. # 35, SAC ¶ 11; D.I. # 49, Answer to SAC ¶ 11; D.I. # 37-6, Mobotec USA, Inc. License Agreement (Jan. 1, 2005) § 2.2(a); D.I. # 37-1, Patent Assignment (Feb. 8, 2002); D.I. # 35, SAC ¶ 11.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

4. *Klaus Oehr, the putative inventor of the '692 Patent, is the President of Hazelmere.*

D.I. # 35, SAC ¶ 11; D.I. # 49, Answer to SAC ¶ 11; D.I. # 35-3, Decl. of Oehr, ¶ 3; D.I. # 63, Oehr Dep. 55:19–56:5.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

B. Nalco and Its Affiliates

5. *Plaintiff Nalco alleges that it is a limited liability Delaware company with its principal place of business at 1601 West Diehl Road, Naperville, Illinois 60563.*

D.I. # 35, SAC ¶ 2, D.I. # 49, Answer to SAC ¶ 2.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

6. *Nalco was previously known as Nalco Mobotec, Inc., or NMI.*

D.I. # 60, Johnson Dep. 20:8–11.

Pl. Response: Disputed. Nalco Company purchased Mobotec USA, Inc. Mobotec USA Inc.'s name was changed to Nalco Mobotec, Inc. Nalco Mobotec, Inc. converted to a Delaware limited liability company and changed its name to Nalco Mobotec, LLC. Dkt. 37.

Def. Reply: Undisputed. Plaintiffs assert a series of immaterial facts, but these assertions raise no dispute as to the proposed fact. Also, Plaintiffs' assertions are not properly supported. D.I. # 37 is a 305-page filing for which Plaintiffs provide no pin cite. To the extent that Plaintiffs rely on the proof of standing, it is not admissible evidence. It is an unsworn statement signed by counsel without firsthand knowledge. Fed. R. Evid. 602 & 802; R. 56; Court's Standing Order on Summary Judgment, Sec. I.C.

7. *Plaintiff Ecolab Inc. alleges that it is a Delaware corporation headquartered at 1 Ecolab Place, St. Paul, Minnesota 55102.*

D.I. # 35, SAC ¶ 7; D.I. # 49, Answer to SAC ¶ 7.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

8. *Plaintiff Ecolab USA Inc. alleges that it is a Delaware corporation headquartered at 1 Ecolab Place, St. Paul, Minnesota 55102.*

D.I. # 35, SAC ¶ 13; D.I. # 49, Answer to SAC ¶ 13.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

9. *Plaintiff Nalco Holding Company alleges that it is a Delaware corporation with its principal place of business is 1601 West Diehl Road, Naperville, Illinois 60563.*

D.I. # 35, SAC ¶ 15; D.I. # 49, Answer to SAC ¶ 15.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

10. *Plaintiff Nalco U.S. 2 Inc. alleges that it is a Delaware corporation with its principal place of business is 1 Ecolab Place, St. Paul, Minnesota 55102.*

D.I. # 35, SAC ¶ 17; D.I. # 49, Answer to SAC ¶ 17.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

11. *Plaintiff Mobotec AB, LLC alleges that it is a North Carolina limited liability company and that its principal place of business is 1601 West Diehl Road, Naperville, Illinois 60563.*

D.I. # 35, SAC ¶ 19; D.I. # 49, Answer to SAC ¶ 19.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

III. DEFENDANTS

A. WPS

12. *WPS is a Wisconsin corporation.*

D.I. # 35, SAC ¶ 21; D.I. # 49, Answer to SAC ¶ 21.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

13. *WPS has its principal offices and corporate headquarters at 700 N. Adams Street, Green Bay, WI 54301.*

D.I. # 35, SAC ¶ 22; D.I. # 49, Answer to SAC ¶ 22.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

14. *WPS is ultimately owned by WEC Energy Group, Inc., a publicly traded company.*

D.I. # 14, WPS Corporate Disclosure Statement.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

B. WPL

15. *WPL is a Wisconsin corporation.*

Case 280 D.I. # 38, SAC ¶ 21; Case 280 D.I. # 54, Answer to SAC ¶ 21.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

16. *WPL has its principal offices and corporate headquarters at 4902 N. Biltmore Lane, Madison, WI 53718-2148.*

Case 280 D.I. # 38, SAC ¶ 22; Case 280 D.I. # 54, Answer to SAC ¶ 22.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

17. *WPL is owned by Alliant Energy Corporation, a publicly traded company.*

Case 280 D.I. # 16, WPL Corporate Disclosure Statement.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

18. *AECS is an affiliate of WPL.*

Mark Dec. Ex. 1, Nalco Company and Alliant Energy Corporate Services, Inc. General Agreement (January 1, 2011) §§ (1)(b), (1)(g).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

C. MGE

19. *MGE has its principal offices and corporate headquarters at 133 South Blair Street, Madison, WI 53788.*

Case 280 D.I. # 38, SAC ¶ 24; Case 280 D.I. # 54, Answer to SAC ¶ 24.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

20. *MGE is owned by MGE Energy, Inc., a publicly traded company.*

Case 280 D.I. # 18, MGE Corporate Disclosure Statement

Pl. Response: Undisputed.

Def. Reply: Undisputed.

D. Weston Power Plant Unit 3

21. *Weston Power Plant Unit 3 is a unit of a coal-fired power plant located at 2501 Morrison Ave., Rothschild, WI 54474.*

D.I. # 35, SAC ¶ 21; D.I. # 49, Answer to SAC ¶ 21.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

22. *WPS is the owner and operator of Weston Power Plant Unit 3.*

D.I. # 35, SAC ¶ 21; D.I. # 49, Answer to SAC ¶ 21.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

E. Columbia Energy Center Unit 1

23. *Columbia Energy Center Unit 1 is a unit of a coal-fired power plant located at W8375 Murray Rd., Pardeeville, WI 53954.*

Case 280 D.I. # 38, SAC ¶ 21; Case 280 D.I. # 54, Answer to SAC ¶ 21.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

24. *WPL, WPS, and MGE are co-owners as tenants in common of Columbia Energy Center Unit 1.*

Case 280 D.I. # 38, SAC ¶ 21; Case 280 D.I. # 54, Answer to SAC ¶ 21; D.I. #66, Lokenvitz Dep. 16:17–24; Mark Decl. Ex. 144, Amended and Restated Agreement for Construction and Operation of Columbia Generating Plant (Jan. 17, 2007), Background.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

25. *WPL operates the Columbia Energy Center.*

Case 280 D.I. # 38, SAC ¶ 21; Case 280 D.I. # 54, Answer to SAC ¶ 21.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

F. Arbor

26. *Arbor is a limited liability company incorporated in Delaware.*

D.I. # 35, SAC ¶ 24; D.I. # 49, Answer to SAC ¶ 24.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

27. *Arbor has its principal offices at 414 S. Main Street, Suite 600, Ann Arbor, Michigan 48104.*

D.I. # 35, SAC ¶ 26; D.I. # 49, Answer to SAC ¶ 26.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

28. *From November 2, 2016 through July 13, 2018, Arbor owned and operated a Refined Coal facility that sold Refined Coal to the Weston Power Plant.*

Mark Decl. Ex. 137, Arbor Fuels Notice of Commercial Operations (Nov. 2, 2016), at ARBOR_00001382; D.I. # 59, Hujet Dep. 182:18–184:09; D.I. # 64, Panczak Dep. 261:24–262:20; D.I. # 65, Raleigh Dep. 12:21–13:10; Mark Decl. Ex. 146, Nov. 2, 2016 Letter, at ARBOR_00001381; D.I. # 61, Kaminski Dep. 224:2–4.

[REDACTED]

[REDACTED]

29.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

G. Portage

30. *Portage is a limited liability company incorporated in Delaware.*

Case 280 D.I. # 38, SAC ¶ 25; Case 280 D.I. # 54, Answer to SAC ¶ 25.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

31. *Portage has its principal offices at 414 S. Main Street, Suite 600, Ann Arbor, Michigan 48104.*

Case 280 D.I. # 38, SAC ¶ 27; Case 280 D.I. # 54, Answer to SAC ¶ 27.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

32. *From October 4, 2016 through July 31, 2018, Portage owned and operated a Refined Coal facility that sold Refined Coal to the Columbia Energy Center.*

Mark Decl. Ex. 147, Aug. 22, 2016 Email, at WPL_00012684; Mark Decl. Ex. 148, "Columbia Refined Coal Approval Request," at WPL_00012687; Case 280 D.I. # 66, Lokenvitz Dep. 290:301:23; Case 280 D.I. # 73, Whittaker Dep. 46:7-46:9.; 50:11-50:14; 166:18-167:5; 167:21-167:25; Mark Decl. Ex. 149, Panczak Ex. 15, July 17, 2015 email, at PORTAGE_00094295-296; D.I. # 64, Panczak Dep. 217:9-223:25 Mark Decl. Ex. 150, Panczak Ex. 16, Dec. 2, 2015 Email, at PORTAGE_0095220-221; D.I. # 64, Panczak Dep. 224:1-231:4; Mark Decl. Ex. 47, Berkimer Ex. 6, Portage Fuels October 2016 Operating Report, at PORTAGE_00000451; D.I. # 57, Berkimer Dep. 47:3-54:1.

[REDACTED]

33.

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

H. Ownership of Arbor and Portage

34.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

35.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

36. *Arbor and Portage are ultimately owned by DTE Energy Company, a publicly traded company.*

D.I. # 31, Arbor Corporate Disclosure Statement; Case 280 D.I. # 32, Portage Corporate Disclosure Statement.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

IV. JURISDICTION AND VENUE FOR CASE 279

A. Subject Matter Jurisdiction

37. *Provided that the Court finds that Nalco had standing to bring its claims in Nalco Co. v. Wis. Pub. Serv. Corp., No. 3:18-cv-279 (W.D. Wis.), the Court has subject matter jurisdiction over that action pursuant to 28 U.S.C. §§ 1331 and 1338(a) because the claims and counterclaims arise under the Patent Act, 35 U.S.C. § 1 et seq.*

D.I. # 1, Complaint, ¶ 10; D.I. # 20, First Amended Complaint, ¶ 19; D.I. # 35, SAC ¶ 28; D.I. # 30, Counterclaims, ¶ 7; D.I. # 49, Counterclaims ¶7

Pl. Response: Disputed. Even if Nalco is found not to have standing, Plaintiff Hazelmere would still have standing, and on that basis the Court would have jurisdiction as well.

Def. Reply: Undisputed. Plaintiffs do not dispute that the Court would have subject matter jurisdiction over the action if the Court finds that Nalco has standing. Plaintiffs assert that Hazelmere would have standing even if Nalco does not, but this is immaterial to the proposed fact. Defendants address that legal argument in their Opening and Reply Briefs.

B. Personal Jurisdiction

38. *The Court has personal jurisdiction over Nalco in Nalco Co. v. Wis. Pub. Serv. Corp., No. 3:18-cv-279 (W.D. Wis.) because Nalco availed itself of the Court by filing a complaint for patent infringement in that action.*

D.I. # 1, Complaint, ¶ 1; D.I. # 20, First Amended Complaint, ¶ 1; D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

39. *The Court has personal jurisdiction over Hazelmere in Nalco Co. v. Wis. Pub. Serv. Corp., No. 3:18-cv-279 (W.D. Wis.) because Hazelmere availed itself of the Court by filing a complaint for patent infringement in that action.*

D.I. # 20, First Amended Complaint, ¶ 1; D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

40. *The Court has personal jurisdiction over Ecolab Inc. in Nalco Co. v. Wis. Pub. Serv. Corp., No. 3:18-cv-279 (W.D. Wis.) because Ecolab Inc. availed itself of the Court by filing a complaint for patent infringement in that action.*

D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

41. *The Court has personal jurisdiction over Ecolab USA Inc. in Nalco Co. v. Wis. Pub. Serv. Corp., No. 3:18-cv-279 (W.D. Wis.) because Ecolab USA Inc. availed itself of the Court by filing a complaint for patent infringement in that action.*

D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

42. *The Court has personal jurisdiction over Nalco Holding Company in Nalco Co. v. Wis. Pub. Serv. Corp., No. 3:18-cv-279 (W.D. Wis.) because Nalco Holding Company availed itself of the Court by filing a complaint for patent infringement in that action.*

D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

43. *The Court has personal jurisdiction over Nalco U.S. 2 Inc. in Nalco Co. v. Wis. Pub. Serv. Corp., No. 3:18-cv-279 (W.D. Wis.) because Nalco U.S. 2 Inc. availed itself of the Court by filing a complaint for patent infringement in that action.*

D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

44. *The Court has personal jurisdiction over Mobotec AB LLC in Nalco Co. v. Wis. Pub. Serv. Corp., No. 3:18-cv-279 (W.D. Wis.) because Mobotec AB LLC availed itself of the Court by filing a complaint for patent infringement in that action.*

D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

C. Venue

45. *Venue for the counterclaims in Nalco Co. v. Wis. Pub. Serv. Corp., No. 3:18-cv-279 (W.D. Wis.) is proper in this judicial district pursuant to 28 U.S.C. §§ 1391 because Plaintiffs accuse the Defendants of committing acts of patent infringement in this district and have sued Defendants in this district.*

D.I. # 1, Complaint, ¶¶ 11-12; D.I. # 20, First Amended Complaint, ¶¶ 20-21; D.I. # 35, SAC ¶¶ 29-30.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

V. JURISDICTION AND VENUE FOR CASE 280

A. Subject Matter Jurisdiction

46. *Provided that the Court finds that Nalco had standing to bring its claims in Nalco Co. v. Wis. Power & Light Co., No. 3:18-cv-280 (W.D. Wis.), the Court has subject matter jurisdiction over that action pursuant to 28 U.S.C. §§ 1331 and 1338(a) because the claims and counterclaims arise under the Patent Act, 35 U.S.C. § 1 et seq.*

Case 280, D.I. # 1, Complaint, ¶ 11; Case 280, D.I. # 24, First Amended Complaint, ¶ 20; Case 280, D.I. # 35, SAC ¶ 29; Case 280, D.I. # 31, Counterclaims, ¶ 9; Case 280, D.I. # 54, Counterclaims ¶ 8.

Pl. Response: Disputed. Even if Nalco is found not to have standing, Plaintiff Hazelmere would still have standing, and on that basis the Court would have jurisdiction as well.

Def. Reply: Undisputed. Plaintiffs do not dispute that the Court would have subject matter jurisdiction over the action if the Court finds that Nalco has standing. Plaintiffs assert that Hazelmere would have standing even if Nalco does not, but this is immaterial to the proposed fact. Defendants address that legal argument in their Opening and Reply Briefs.

B. Personal Jurisdiction

47. *The Court has personal jurisdiction over Nalco in Nalco Co. v. Wis. Power & Light Co., No. 3:18-cv-280 (W.D. Wis.) because Nalco Company LLC availed itself of the Court by filing a complaint for patent infringement in that action.*

Case 280, D.I. # 1, Complaint, ¶ 1; Case 280, D.I. # 24, First Amended Complaint, ¶ 1; Case 280, D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

48. *The Court has personal jurisdiction over Hazelmere in Nalco Co. v. Wis. Power & Light Co., No. 3:18-cv-280 (W.D. Wis.) because Hazelmere Research Ltd. availed itself of the Court by filing a complaint for patent infringement in that action.*

Case 280, D.I. # 24, First Amended Complaint, ¶ 1; Case 280, D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

49. *The Court has personal jurisdiction over Ecolab Inc. in Nalco Co. v. Wis. Power & Light Co., No. 3:18-cv-280 (W.D. Wis.) because Ecolab Inc. availed itself of the Court by filing a complaint for patent infringement in that action.*

Case 280, D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

50. *The Court has personal jurisdiction over Ecolab USA Inc. in Nalco Co. v. Wis. Power & Light Co., No. 3:18-cv-280 (W.D. Wis.) because Ecolab USA Inc. availed itself of the Court by filing a complaint for patent infringement in that action.*

Case 280, D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

51. *The Court has personal jurisdiction over Nalco Holding Company in Nalco Co. v. Wis. Power & Light Co., No. 3:18-cv-280 (W.D. Wis.) because Nalco Holding Company availed itself of the Court by filing a complaint for patent infringement in that action.*

Case 280, D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

52. *The Court has personal jurisdiction over Nalco U.S. 2 Inc. in Nalco Co. v. Wis. Power & Light Co., No. 3:18-cv-280 (W.D. Wis.) because Nalco U.S. 2 Inc. availed itself of the Court by filing a complaint for patent infringement in that action.*

Case 280, D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

53. *The Court has personal jurisdiction over Mobotec AB LLC in Nalco Co. v. Wis. Power & Light Co., No. 3:18-cv-280 (W.D. Wis.) because Mobotec AB LLC*

availed itself of the Court by filing a complaint for patent infringement in that action.

Case 280, D.I. # 35, SAC ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

C. Venue

54. *Venue for the counterclaims in Nalco Co. v. Wis. Power & Light Co., No. 3:18-cv-280 (W.D. Wis.) is proper in this judicial district pursuant to 28 U.S.C. §§ 1391 because Plaintiffs accuse Defendants of committing acts of patent infringement in this district and have sued Defendants in this district.*

Case 280, D.I. # 1, Complaint, ¶¶ 12-13; Case 280, D.I. # 24, First Amended Complaint, ¶¶ 21-22; Case 280, D.I. # 35, SAC ¶¶ 30-31.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

VI. STANDING

A. Plaintiffs' Admissions

55. [REDACTED]

[REDACTED]

Pl. Response: Undisputed for purposes of this case.

Def. Reply: Undisputed.

56. [REDACTED]

[REDACTED]

Pl. Response: Undisputed for purposes of this case.

Def. Reply: Undisputed.

57. [REDACTED]

[REDACTED]

Pl. Response: Undisputed for purposes of this case.

Def. Reply: Undisputed.

58.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed for purposes of this case.

Def. Reply: Undisputed.

59.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

B.

[REDACTED]

60.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

61.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

62.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

63.

[REDACTED]

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

64.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

65.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

66.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

67.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

68.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

69.

[REDACTED]

[REDACTED]

[REDACTED]

I

[REDACTED]

[REDACTED]

[REDACTED]

70.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

71.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

72.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

73.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

74.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

C.

[REDACTED]

75.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

76.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

77.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

78. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

VII. COAL AND COAL-FIRED POWER PLANTS

79. *Jennifer Wilcox, Ph.D. is an expert in physical chemistry and chemical engineering, with specific expertise in coal combustion technology and chemistry, and emission control, including mercury capture from coal-fired power plants.*

D.I. # 75, First Wilcox Report ¶¶ 5, 8, 9, 12, 17.

Pl. Response: Disputed. This proposed finding of fact is disputed for at least the reasons raised in Plaintiffs' Motion to Exclude Certain Portions of Jennifer Wilcox Ph.D.'s Expert Reports and Associated Testimony (Dkt. 99 and Dkt. 124).

Def. Reply: Undisputed. Plaintiffs' Motion to Exclude Certain Portions of Wilcox's Expert Reports and Associated Testimony does not take issue with Dr. Wilcox's expertise in "physical chemistry and chemical engineering, with specific expertise in coal combustion technology and chemistry, and emission control, including mercury capture from coal-fired power plants," but rather her supposed lack of experience in coal-fired power plant operations. D.I. # 99, Motion to Exclude Wilcox Reports, at 1–2, 4–5; D.I. # 120, Def. Opp. Br. Motion to Exclude Wilcox Reports, at 10–11.

A. Coal

80. *Coal is a combustible sedimentary rock mostly composed of carbon, with variable quantities of other elements such as hydrogen, sulfur, oxygen, and nitrogen.*

D.I. # 75, First Wilcox Report ¶ 28.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

81. *Coal contains a number of trace elements, some of which include mercury (Hg), calcium (Ca), magnesium (Mg), chlorine (Cl), bromine (Br), and sodium (Na).*

D.I. # 75, First Wilcox Report ¶ 28.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

82. *Coal is ranked based upon its age.*

D.I. # 75, First Wilcox Report ¶ 29.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

83. *The youngest coal is lignite, followed in increasing age by subbituminous, bituminous, and anthracite.*

D.I. # 75, First Wilcox Report ¶ 29.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

84. *The lowest-ranked (i.e., youngest) coal, lignite, has the lowest carbon content (~60%) and has the greatest number of volatiles and moisture compared to the highest-rank coal, anthracite (carbon content ~90%).*

D.I. # 75, First Wilcox Report ¶ 29.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

85. *Subbituminous coal and lignite coal are two major coal types burned in the United States.*

D.I. #75, First Wilcox Report ¶¶ 29, 166, 183, 217.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

86. *Compounds known as alkali flux are inherently present in coal, but were also known in the prior art to be used as additives to coal combustion systems.*

D.I. #75, First Wilcox Report ¶¶ 69, 149; Mark Decl. Ex. 48, '235 Patent.

Pl. Response: Disputed. The term “alkali flux” appears in certain asserted claims of the ’692 Patent and would have a particular meaning to a POSA as used in those claims, based on the teaching of the ’692 Patent specification. Contrary to this proposed finding of fact, Dr. Fry has opined that “alkali flux,” as used in the claims of the ’692 Patent, does not include compounds inherently present in coal. Dr. Fry stated:

“As I understand the scope of claims 10 and 24 of the ’692 Patent, this claim element requires that alkali flux is something that is added to the system, as opposed to something that occurs naturally in the coal. The ’692 Patent specification refers to the ‘addition’ of lime plus a lime flux and refers to the lime plus a lime flux as an ‘additive’ and ‘additive formula.’ ’692 Patent at 7:29-38. The specification also refers to the ’235 Patent, saying the ’235 Patent describes adding a fossil fuel with an “additive” ’692 Patent at 2:37-47.”

Dkt. 73, Second Fry Report, ¶ 212.

Def. Reply: Undisputed. The response asserts an additional fact, but it raises no dispute of the proposed fact.

B. Combustion of Coal

87. *When coal is combusted, or burned, it reacts with oxygen at high temperatures.*

D.I. # 75, First Wilcox Report ¶ 30.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

88. *In many coal-burning power plants, before it is burned in the boiler, coal is pulverized into particles the size of flour or chalk dust.*

D.I. # 75, First Wilcox Report ¶ 31; D.I. # 72, First Fry Report ¶ 54.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

89. *The two major products resulting from the combustion of coal are carbon dioxide (CO₂) and water vapor (H₂O).*

D.I. # 75, First Wilcox Report ¶ 32.

Pl. Response: Disputed. While Plaintiffs agree that carbon dioxide and water vapor are two products resulting from the combustion of coal, it also is true that the gas resulting from the combustion of coal includes other constituent gases, including carbon monoxide, nitrogen, nitrogen oxides, sulfur oxides, residual oxygen and a number of elemental impurities, and mercury. Dkt. 103, PFF ¶ 52. In addition of course, fly ash will result from the combustion of coal. Dkt. 103, PFF ¶¶ 51-55, 93, 115, 125-127, 196-197; Dkt. 35-1, e.g., 3:55-60.

Def. Reply: Undisputed. The response asserts an additional fact, but it raises no dispute of the proposed fact. Further, Plaintiffs' cited evidence does not support their response. Paragraph 59 of the First Fry Report, cited in Pl. PFF ¶ 52, states that carbon dioxide and water are two major components of the products resulting from the combustion of coal. D.I. # 78, First Fry Report ¶ 59.

90. *Other gases are also formed from the combustion of coal. These include CO (carbon monoxide), SO_x (sulfur oxides, which include SO₂ and SO₃), and NO_x (nitrogen oxides, which include NO and NO₂).*

D.I. # 75, First Wilcox Report ¶ 32.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

91. *Fine particles that rise up in, and out of, the boiler are known as fly ash, while the heavier ash particles that do not rise are termed bottom ash.*

D.I. # 75, First Wilcox Report ¶ 33.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

92. *Fly ashes are complex and heterogeneous materials comprised primarily of inorganic minerals (90-99%) and organic compounds (1-9%).*

D.I. # 75, First Wilcox Report ¶ 33.

Pl. Response: Disputed. Dr. Fry opined that fly ash could be comprised of organic compounds in percentages that were higher than the percentages proposed by Defendants' proposed finding of fact. *See, e.g.,* Dkt. 73, Second Fry Report, ¶ 197.

Def. Reply: Undisputed. The response asserts an additional fact, but it raises no material dispute of the proposed fact. Further, Plaintiffs' cited evidence does not support their response. Paragraph 197 of the Second Fry Report does not reference the percentage of organic compounds found in fly ash. D.I. # 79, Second Fry Report ¶ 197.

93. *When coal is combusted, the mercury in the gases is primarily found in its elemental form (Hg⁰).*

D.I. # 75, First Wilcox Report ¶ 37; D.I. # 72, First Fry Report ¶ 69.

Pl. Response: Disputed. Defendants' proposed fact is vague with respect to the terms "primarily found." Plaintiffs' expert, Dr. Fry, opined that that mercury "becomes part of the flue gas as the flue gas is being created from the combustion of the coal in the combustor. Its form is initially elemental mercury indicated as Hg(0)." Dkt. 72, First Fry Report ¶ 69.

Def. Reply: Undisputed. Plaintiffs do not dispute that when coal is combusted, the mercury in the gases is initially found in its elemental form (Hg^0).

94. *Due to its high vapor pressure and low solubility in water, Hg^0 is difficult to remove from flue gas.*

D.I. # 75, First Wilcox Report ¶ 37; D.I. # 72, First Fry Report ¶ 69.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

95. *Depending on the composition of the coal used, and the down-stream controls in place, mercury (Hg) released during the combustion of coal may also be present in an oxidized form (Hg^{++}) or particulate-bound form (Hg^0), which may be bound to fly ash.*

D.I. # 75, First Wilcox Report ¶ 37.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

96. *The oxidized form of mercury is often present as HgCl_2 , HgBr_2 , and occasionally as HgO , depending on the boiler conditions and halogen content in the coal.*

D.I. # 75, First Wilcox Report ¶ 37.

Pl. Response: Disputed. Defendants' proposed fact is vague with respect to "often present." Dr. Fry opined that "[s]imilar to the question of whether molecular bromine was formed, numerous factors can affect whether $\text{Hg}(0)$ is oxidized by Br_2 (assuming any Br_2 was present) to form HgBr_2 , including the temperature profile of the system, residence time, ash composition and unburned carbon in ash, coal type, other flue gas constituents, pressure, presence of acid gases, water vapor, composition of the system walls, size and orientation of various aspects of the combustion facility, etc. . . ." Dkt. 73, Second Fry Report, ¶ 205.

Def. Reply: Undisputed. Plaintiffs do not dispute that the oxidized form of mercury can be present as HgCl_2 , HgBr_2 , and occasionally as HgO , depending on the boiler conditions and halogen content in the coal.

97. *The formation of the oxidized form of mercury takes place through combined homogeneous (i.e., in the gas phase) and heterogeneous (i.e., gas-surface) pathways.*

D.I. # 75, First Wilcox Report ¶ 37.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

98. *The number and distribution of various halogen species in combustion gases—i.e., their “speciation”—can depend on factors such as temperature.*

D.I. # 75, First Wilcox Report ¶ 113.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

C. Coal-Fired Power Plants

99. *In coal-burning power plants, the heat produced by the oxidation of coal is used to heat water, make steam, and heat steam.*

D.I. # 75, First Wilcox Report ¶ 30; D.I. #72, First Fry Report at ¶¶ 59–60.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

100. *The hot steam produced in the coal-fired power plant is used to power a turbine for electricity generation.*

D.I. # 75, First Wilcox Report ¶ 30; D.I. #72, First Fry Report ¶ 48.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

101. *Many different types of boilers, or furnaces, are used to burn coal.*

D.I. # 75, First Wilcox Report ¶¶ 42, 187, 209; D.I. # 72, First Fry Report ¶ 58; D.I. # 71, Fry Dep. 71:19–72:22.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as vague with respect to Defendants’ assertion that there are “many different types of boilers.” Plaintiffs have proffered evidence from Dr. Fry that at least five types of boilers may be used to burn coal including tangentially-fired boilers, wall-fired boilers, cyclone, fluidized bed, and arch-fired boilers. Dr. Fry further testified that the two types of boilers that represent the majority of installed coal generating capacity in the United States are tangentially-fired boilers and wall-fired boilers. Dkt. 72, First Fry Report, ¶ 58.

Def. Reply: Undisputed. Plaintiffs do not dispute that at least several different types of boilers may be used to burn coal. Additionally, Plaintiffs assert an additional fact, but it raises no dispute of the stated fact.

102. *The goals of the various coal-burning or coal-fired power plant systems are: (i) storing coal, preparing it to be burned, and introducing the coal and air into the boiler; (ii) combusting the coal and capturing the heat created in the combustion*

“fireball” to heat and pressurize steam for use in generating electricity; (iii) minimizing the emission of harmful substances into the atmosphere; and (iv) recovering as much heat as possible from the combustion gases before they are emitted into the atmosphere.

D.I. # 75, First Wilcox Report ¶¶ 30, 34–40, 42.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as vague with respect to Defendants’ use of the term “goals.” Plaintiffs further dispute Defendants’ proposed finding of fact as it does not provide a complete description of a coal-fired power plant. Dr. Fry testified in detail about the background of a coal-fired power plant. Dkt. 72, First Fry Report, ¶¶ 48–67.

Def. Reply: Undisputed. Plaintiffs’ response does not raise a dispute of the stated fact. Plaintiffs fail to identify anything that is inaccurate about the state fact nor point to anything in particular from the Fry report that they claim is material.

103. *The coal yard receives and stores coal.*

D.I. # 75, First Wilcox Report ¶ 42; D.I. # 72, First Fry Report ¶ 52.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

104. *The initial processing of coal takes place in the crusher house.*

D.I. # 72, First Fry Report ¶¶ 52–54.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

105. *The processing that takes place in the crusher house may include crushing the coal from the yard into $\frac{3}{4}$ ” pieces, and may also include applying additives to coal.*

D.I. # 72, First Fry Report ¶ 163.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

106. *The crushed coal is transferred from the crusher house to the power plant for storage in silos.*

D.I. # 75, First Wilcox Report ¶ 42; D.I. # 72, First Fry Report ¶ 52–54.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

107. *The crushed coal received at the power plant is fed from the silos into the pulverizers, or mills, which further reduce the size of the coal to particles having the size of chalk dust*

D.I. # 72, First Fry Report ¶ 54; D.I. # 75, First Wilcox Report ¶ 42.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

108. *Additional coal additives may be applied to or mixed with the coal prior to pulverization.*

D.I. # 75, First Wilcox Report ¶ 42; D.I. # 72, First Fry Report ¶ 54.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as vague with respect to Defendants' use of the term "additional." Plaintiffs do not dispute that coal additives may be applied to or mixed with the coal prior to pulverization.

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact.

109. *Pulverized coal and air are blown into the "combustion zone," which is part of the "lower furnace" of the boiler.*

D.I. # 75, First Wilcox Report ¶¶ 42, 113; D.I. # 72, First Fry Report ¶ 58.

[REDACTED]

[REDACTED]

110. *The "typical temperatures" of the gases in the combustion zone extend up to 2500 or 3000 °F.*

D.I. # 71, Fry Dep. 185:25–186:25.

Pl. Response: Disputed. The reference to "typical temperatures" is not tied to any particular [REDACTED]

[REDACTED]

[REDACTED]

111. *The size and shape of the flames in the combustion zone vary depending on the type of firing system used in the boiler.*

D.I. # 72, First Fry Report ¶ 58.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

112. *Wall-fired boilers have burners arranged in arrays on opposing walls of the boiler.*

D.I. # 72, First Fry Report ¶ 58.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

113. *In tangentially-fired boilers, the nozzles for coal introduction are situated along the corners of the boiler, so that the combusting coal creates a vortex, or rotating fireball, within the boiler.*

D.I. # 72, First Fry Report ¶ 58.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

114. *Other boiler types with differing flame structure include cyclone, circulating fluidized bed, and arch-fired boilers, and their operation can vary significantly.*

D.I. # 72, First Fry Report ¶ 58; D.I. #71, Fry Dep. 71:19–73:21.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

115. *The terms “furnace” or “boiler” do not describe a single monolithic or homogenous area.*

D.I. # 76, Second Wilcox Report ¶ 41; D.I. # 72, Fry First Report ¶ 55 & n.5; D.I. # 71, Fry Dep. 109:19–110:5.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

116. *The combustion zone is located in the lower furnace, which is the hottest portion of the boiler, with temperatures ranging from 2500 °F (1370 °C) to 3000 °F.*

D.I. # 75, First Wilcox Report ¶¶ 42–43; D.I. # 76, Second Wilcox Report ¶ 27; D.I. # 72, First Fry Report ¶ 58; D.I. # 71, Fry Dep. 109:8–110:5.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact as it mischaracterizes the cited evidence. Dr. Fry has testified that [REDACTED]

[REDACTED] Dr. Fry further testified that [REDACTED]

[REDACTED] Dr. Wilcox testified that combustion zone temperatures are about 1370° C (or 2498° F). Dkt. 103, PFF ¶ 132.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact. Fry’s testimony is consistent with the fact that [REDACTED] Further, Wilcox testified that combustion zone temperatures are “about” 2490°F, which is consistent with the fact that combustion zone temperatures “range from” 2500°F to 3000°F.

117. *The area of the lower furnace in which the coal combusts is known as the “combustion zone,” and it may contain a “fireball.”*

D.I. # 76, Second Wilcox Report ¶ 36; D.I. # 72, First Fry Report ¶ 55; D.I. # 71, Fry Dep. 113:3–23, 119:13–120:24.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact as it mischaracterizes the cited evidence. In his expert report, Dr. Fry testified that the combustion zone could be identified by looking at a particular image in his expert report. Dr. Fry further testified that [REDACTED]

[REDACTED] Dr. Fry further testified that “[t]angentially-fired boilers . . . arrange the coal injection

nozzles in four corners of a square cross section boiler. The nozzles are designed to delay ignition of the coal which is injected at high velocities at an angle off the center axis of the boiler, causing a vortex or rotating fireball in the center of the boiler.” Dkt. 72, First Fry Report, ¶¶ 55, 58.

Def. Reply: Undisputed. Def. PFF ¶ 117 does not mischaracterize Fry’s testimony, as is evidenced by comparing Def. PFF ¶ 117 with the referenced portions of the First Fry Report and Fry’s deposition.

118. *Heat produced from the combusting coal radiates to the walls of the lower furnace, which is lined with pipes containing water that is converted to steam.*

D.I. # 72, First Fry Report ¶ 59, 60; D.I. # 71, Fry Dep. 96:17– 97:18.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact as it mischaracterizes the cited evidence. Dr. Fry testified that “[h]eat from the combustion process radiates to the walls of the boiler where water is converted to steam.” Dr. Fry does not say anything about “the lower furnace” or that the lower furnace “is lined with pipes containing water.” Dkt. No. 72, First Fry Report ¶ 59, 60; Dkt. 71, Fry Dep. 96:17– 97:18.

Def. Reply: Undisputed. Def. PFF ¶ 118 does not mischaracterize the cited evidence. Fry stated in ¶ 60 of his First Report that the boiler walls are “made from tubes containing boiler water stacked neatly side-by-side.” He further testified that the “top horizontal section of the boiler,” distinct from the “lower furnace” as specified in Def. PFF ¶ 118, contains heat exchangers rather than tubes containing boiling water.

119. *The boiler in a coal-fired power plant is typically huge, and contains various features (such as the nozzles for introducing coal, and the nose arch, and the exit) that help define a variety of specific locations that a POSA recognizes to have characteristic temperatures and gas compositions.*

D.I. # 76, Second Wilcox Report ¶ 41.

Pl. Response: Disputed. While Plaintiffs agree that a coal-fired power plant is typically huge, the description cited here appears to be limited to the furnace portion of a boiler, which includes the various features recited in the parenthetical. The boiler, will include additional structures, including the superheater and the economizer referred to in the ’692 Patent specification. Dkt. 72, Fry’s First Report, ¶ 60.

Def. Reply: Undisputed. Plaintiffs admit that the boiler in a coal-fired power plant includes the features discussed in Def. PFF ¶ 119. Plaintiffs’ identification of additional features does not dispute the stated fact.

120. *The gases present in the lower furnace include air and the gases formed from the combustion of coal.*

D.I. # 71 Fry Dep. 123:19–124:11; D.I. # 72, First Fry Report ¶ 58–60.

Pl. Response: Undisputed. With the understanding that the reference to “gases formed from the combustion of coal” refers to the “flue gas,” Dr. Wilcox testified is “born” in the combustion zone. Dkt. 103, PFF ¶ 406.

Def. Reply: Undisputed. The response asserts an additional fact that does not respond to the proposed fact. Moreover, Wilcox did not testify that flue gas was born in the combustion zone. The record shows that at 144:10–15, Wilcox testified as follows:

A. And I would say just like the patent that you showed me, they would say that that -- and just like all the definitions that Andrew Fry gave in his expert report and responses, yes, that is where flue gasses are borne in the furnace because that is what oxidation of coal means. But it doesn't mean that that is the same as flue gas. And so it's not easy to say yes or no because that would imply that that's flue gas and it's not. It's where it's borne, and it quickly leaves that region, and that region is fuel-rich and it's not flue gas. D.I. # 69, Wilcox Dep. 144:10–15.

121. *Combustion proceeds in stages in many commercial boilers, such that the composition of the combustion gases varies at different locations throughout the furnace.*

D.I. # 76, Second Wilcox Report ¶ 16; D.I. # 71, Fry Dep. 126:3– 127:3.

Pl. Response: Disputed. Defendants have mischaracterized Dr. Fry's testimony being used to support this finding of fact. Dr. Fry did not testify that “[c]ombustion proceeds in stages in many commercial boilers . . .” as asserted by Defendants. Rather, Dr. Fry simply testified that with respect to a hand-drawn diagram that Dr. Fry drew during his deposition, that “[t]he chemical composition of the flue gas as it proceeds through this system continuously changes all the way through the end.” Dkt. 71, Fr. Dep. 126:3–127:3. Dr. Fry also testified that the combustion zone is below the nose arch. Dkt. 71, Fr. Dep. 87: 16-21.

Def. Reply: Undisputed. Def. PFF ¶ 121 does not mischaracterize Fry's testimony, as evidenced by comparing Def. PFF ¶ 121 with the Fry deposition at 126:3–127:3. Fry's testimony is consistent with the stated fact that “combustion proceeds in stages” in many commercial boilers.

122. *The composition of combustion gases varies dramatically at different points in the furnace and plant, based on the different stages of combustion that have taken place.*

D.I. # 76, Second Wilcox Report ¶ 17.

Pl. Response: Disputed. Defendants' proposed fact is vague with respect to “varies dramatically.” Dr. Fry has testified that there are other factors affecting the composition of combustion. For example, Dr. Fry testified that “[t]he composition of [flue gas] varies depending on the coal type and origin.” Dkt. 72, First Fry Report, ¶ 61.

Def. Reply: Undisputed that the composition of combustion gases “varies” at different points in the furnace and plant, based on the different

stages of combustion that have taken place. The response offers no evidence to dispute this; it asserts an additional fact, but it raises no dispute of the stated fact.

123. *Many combustors use staged combustion, by which partial combustion takes place in the combustion zone, followed by combustion to substantial completion when the gas stream is exposed to “overfired air.”*

D.I. # 76, Second Wilcox Report ¶¶ 16, 82; D.I. # 71, Fry Dep. 114:13–120:11.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

124. *By staging combustion so that the combustion proceeds stepwise, with partial combustion first, followed by additional combustion after the introduction of the overfired air, the production of certain nitrogen oxide (NO_x) compounds is reduced.*

D.I. # 76, Second Wilcox Report ¶ 16. D.I. # 71, Fry Dep. 114:3–14.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

125. *The combustion of coal in a boiler having staged combustion is not substantially complete until after the initial combustion gases are further combusted in the “overfired” air.*

D.I. # 76, Second Wilcox Report ¶ 82.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

126. *The gas stream after the substantial completion of combustion is different from the gas in the combustion zone in two very important ways: temperature and composition.*

D.I. # 76, Second Wilcox Report ¶ 38; D.I. # 71, Fry Dep. 126:3–127:3.

Pl. Response: Disputed. Defendants’ proposed finding of fact is vague with respect to the terms “substantial completion” and “very important ways.” Plaintiffs further dispute this proposed fact as Defendants have mischaracterized Dr. Fry’s testimony being used to support this finding of fact. Dr. Fry simply testified that with respect to a hand-drawn diagram that Dr. Fry drew during his deposition, that “[t]he chemical composition of the flue gas as it proceeds through this system continuously changes all the way through the end.” Notably, Dr. Fry does not limit his testimony to “two very important ways,” as alleged by Defendants. Dkt. 71, Fr. Dep. 126:3–127:3.

Def. Reply: Undisputed. Def. PFF ¶ 126 does not mischaracterize the cited evidence. Fry’s testimony is consistent with the stated fact, and with Wilcox’s testimony that gases in the combustion zone and gases after the substantial completion of combustion “differ in two very different ways: temperature and composition.” D.I. # 76, Second Wilcox Report ¶ 86.

127. *The use of overfired air, and staged combustion, can reduce NOx formation.*

D.I. # 75, First Wilcox Report ¶ 43–44; D.I. # 71 Fry Dep. 81:19– 82:1; D.I. # 72, First Fry Report ¶ 65.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

128. *In staged combustion, higher levels of carbon monoxide are usually formed during the initial combustion; the overfired air converts some of the carbon monoxide into carbon dioxide.*

D.I. # 75, First Wilcox Report ¶ 34.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

129. *As the hot air and gases generated from the combustion of coal rise, they change in temperature and composition, and in many boilers eventually encounter a prominent constriction known as the “nose arch.”*

D.I. # 71, Fry Dep. 108:19–109:7.



130. *After the hot air and combustion gases rise past the nose arch, they cool further as they pass through various sections and systems that allow them to transfer heat (largely through convection) to pipes that contain steam and/or water.*

D.I. # 71, Fry Dep. 109:08–112:13; D.I. # 72, First Fry Report ¶ 60.

Pl. Response: Disputed. This proposed fact is ambiguous in its use of the term “combustion gases” in the context of the proposed fact. The citation in support is to opinion from Dr. Fry’s Expert Report wherein he refers to “flue gas,” not “hot air and combustion gases.” Dkt. 72, ¶ 60. Dr. Fry testified that “I don’t typically use the term ‘combustion gases.’ I would use combustion products interchangeably with flue gas.” Dkt. 71, Fry Dep. 118:1-5.

Def. Reply: Undisputed. Plaintiffs’ assertion regarding flue gas does not create a dispute, as Fry defines flue gas as “the gas produced during the combustion of coal.” Plaintiffs assert an additional fact, but it raises no dispute of the proposed fact.

131. *The “superheaters” heat the steam contained within pipes in the superheaters, and the heated steam is used to power turbines.*

D.I. # 71, Fry Dep. 109:08–112:13; D.I. # 72, First Fry Report ¶ 60.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

132. *According to Plaintiffs’ expert witness, Andrew Fry, the gas in the lower furnace contains a combination of air and what he refers to as flue gas, but at some point after the combustion zone, and especially when the gases pass through the convective section, the gases mix extensively, and the gases in the system become homogeneous and are collectively referred to as “flue gas.”*

D.I. # 71, Fry Dep. 162:07–163:14, 97:1–18.

Pl. Response: Disputed. This summary of Dr. Fry’s testimony does not accurately quote all of the parameters of his testimony on this topic in the pages cited by Defendants, and Plaintiffs refer to the Court to those pages for the accurate representation of Dr. Fry’s testimony in this respect.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative. Further, Def. PFF ¶ 132 does not misconstrue Fry’s testimony, as is evident by comparing Def. PFF ¶ 132 to the language of the Fry deposition.

133. *The flue gas stream cools as it passes through the superheater, the convective zone, and “economizers,” which contain pipes that absorb the heat and transfer it to the water that they carry, preheating such water to its boiling points.*

D.I. # 72, First Fry Report ¶ 60.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

134. *By the time they leave the economizer, the flue gases may have cooled to approximately 600 to 700 °F.*

D.I. # 75, First Wilcox Report ¶ 42–43; D.I. # 72, First Fry Report ¶ 61.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

135. *The superheater section and economizer/ESP section of the combustor are both well downstream of the combustion zone.*

D.I. # 76, Second Wilcox Report ¶ 21; D.I. # 72, First Fry Report ¶¶ 60–61.

Pl. Response: Disputed. This proposed finding of fact is vague and indefinite with respect to Defendants’ use of the term “well.”

Def. Reply: Undisputed. Plaintiffs’ response does not raise any material dispute to the stated fact.

136. *When the flue gas stream exits the economizer into the remainder of the “flue gas ductwork,” it encounters a number of “air-pollution control devices.”*

D.I. # 75, First Wilcox Report ¶ 42; D.I. # 72, First Fry Report ¶ 62.

Pl. Response: Disputed. The citations do not support referring to the pathway of the flue gas after it exits the economizer as “flue gas ductwork.” However, Plaintiffs do not dispute that when the flue gas stream exits the economizer, it will exit the boiler, and thereafter potentially encounter one or more air pollution control devices, such as electrostatic precipitators or fabric filters. Dkt. 72, Fry’s First Report, ¶¶ 62 & 63.

Def. Reply: Undisputed. Plaintiffs do not dispute that flue gas passes through air pollution control devices. Furthermore, Plaintiffs’ assertion that “the citations do not support referring to the pathway of the flue gas after it exits the economizer as ‘flue gas ductwork’” is incorrect. Rather, in the cited paragraph, Wilcox notes that flue gas “travels through ductwork through the smokestack.” D.I. # 75, First Wilcox Report ¶ 42.

137. *The particulates in flue gas include fly ash, which may be captured and sold for use by the concrete industry.*

D.I. # 72, First Fry Report ¶ 61.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

138. *Fabric filters, also known as baghouses, are used to filter solid particles from flue gas.*

D.I. # 72, First Fry Report ¶ 63; D.I. # 73, Second Fry Report ¶ 72; D.I. # 75, First Wilcox Report ¶¶ 45, 214.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

139. *Coal combustion systems routinely use particulate collection devices to remove particles.*

D.I. # 71, Fry Dep. 82:9–25; D.I. # 75, First Wilcox Report ¶ 209.

Pl. Response: Disputed. Defendants have not identified evidence that supports the proposed fact. In particular, the evidence cited by Defendants does not indicate that particulate collection devices are “routinely” used by “coal combustion systems. The cited testimony by Dr. Fry only indicates that he is familiar with particulate collection devices, not that they are “routinely” used. The cited opinion from Dr. Wilcox only refers to use of particulate collection devices used in “coal-fired electric utility boilers,” specifically, not to their use in “coal combustion systems” generally. To the extent that the phrase “coal combustion systems” can include systems other than in “coal-fired electric utility boilers,” Defendants offer no evidentiary support for this statement, and Dr. Fry has offered opinion that contradicts the statement. Dr. Fry stated:

“I disagree with Dr. Wilcox’s opinion that any modern coal combustion furnace would employ a particulate collection device. This is not always the case for small scale intermittent furnaces.”

Dkt. 73, Second Fry Report, ¶ 253.

Def. Reply: Undisputed. Defendants’ cited evidence supports the stated fact. The cited testimony by Fry is consistent with the stated fact that particulate collection devices are routinely used by coal combustion systems. At most, the testimony disputes a finding that “any” coal combustion furnace would employ a particular collection device, which is not what Defendants assert in Def. PFF ¶ 139.

140. *Flue gas desulfurization (“FGD”) units, or scrubbers, remove SO_x from the flue gas.*

D.I. # 72, First Fry Report ¶ 64.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

141. *In a wet FGD unit, water that contains chemicals such as calcium carbonate or lime is injected into the flue gas, where they react with SO_x compounds to form calcium sulfite, which may then be removed.*

D.I. # 72, First Fry Report ¶ 64.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

142. *FGD systems have been in use since in the 1980s.*

D.I. # 75, First Wilcox Report ¶ 210 (citing Kilgroe at 3–14); D.I. # 72, First Fry Report ¶ 64.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

143. *Selective catalytic reducers (“SCR”) and selective non-catalytic reducers (“SNCR”) are used to reduce NOx emissions.*

D.I. # 72, First Fry Report ¶ 65.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

144. *In SCR and SNCR systems, a liquid chemical such as ammonia or urea is injected into the flue gas to convert the NOx to molecular nitrogen.*

D.I. # 72, First Fry Report ¶ 65; D.I. # 71, Fry Dep. 70:17–71:11.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

145. *SCR systems have been in use since the 1990s.*

D.I. # 72, First Fry Report ¶ 65.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

146. *Activated carbon injection (“ACI”) has been used since the 1990s to decrease mercury emissions from coal-burning power plants.*

D.I. # 72, Fry First Report ¶ 66; Mark Decl. Ex. 185, Evan J. Granite et al., Sorbents for Mercury Removal from Flue Gas, U.S. DEP’T OF ENERGY FED. ENERGY TECH, CTR 17 (1998) at § 3.0.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

147. *In ACI, activated carbon is injected into the flue gas at low temperatures.*

D.I. # 75, First Wilcox Report ¶ 53–55; D.I. # 72, First Fry Report ¶ 66; D.I. # 71, Fry Dep. 75:23–77:4.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

148. *Activated carbon adsorbs mercury from the flue gas stream; it also can oxidize elemental mercury (Hg⁰) to Hg⁺⁺.*

D.I. # 75, First Wilcox Report ¶ 53–55; D.I. # 72, First Fry Report ¶ 66; D.I. # 71 Fry Dep. 75:23–77:4.

Pl. Response: Disputed. The materials being relied on to support Defendants’ proposed finding of fact have been mischaracterized. For example, none of the referenced citations support Defendants’ assertion that “[a]ctivated carbon . . . can oxidize elemental mercury (Hg⁰) to Hg⁺⁺).”

Def. Reply: Undisputed. Plaintiffs’ response misstates the record. Paragraphs 53 and 54 of the First Wilcox Report are headed “Removal of Mercury through Activated Carbon Injection.” Paragraph 54 discusses activated carbon adsorption and heterogeneous oxidation of Hg⁰ to Hg⁺⁺.

149. *Activated carbon that has bound mercury is captured in an electrostatic precipitator (ESP) or the fabric filter.*

D.I. # 75, First Wilcox Report ¶ 53–55; D.I. # 72, First Fry Report ¶ 66; D.I. # 71, Fry Dep. 75:23–77:4.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

150. *Brominated activated carbon, or activated carbon treated with other halogens, may also be injected into flue gas in order to capture mercury.*

D.I. # 71, Fry Dep. 77:23–79:17.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

151. *Flue gas continues to cool as it streams through the flue gas ductwork and the air pollution control systems.*

D.I. # 72, First Fry Report ¶ 67.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

152. *Finally, flue gas enters the stack, which resembles a tall chimney, and rises up through the stack and exits into the atmosphere.*

D.I. # 72, First Fry Report ¶ 67; D.I. # 71, Fry Dep. 163:3–14.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

153. *Plaintiffs' expert witness, Andrew Fry, testified that the gases going through the flue gas ductwork and heading toward the stack are flue gas, but that he has no opinion regarding "at what point above the end of the stack [i]t would no longer be called flue gas."*

D.I. # 71, Fry Dep. 163:3–18.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

D. Methods for Introducing Chemicals Into Coal-Fired Power Plants

154. *In 2001, at the time of the application leading to the '692 Patent, three distinct methods were recognized for introducing chemicals and other substances into systems of a coal-fired power plant for the purpose of reducing or modifying emissions.*

D.I. # 75, First Wilcox Report ¶ 61; D.I. # 76, Second Wilcox Report ¶ 54; D.I. # 74, Third Fry Report ¶ 53.

Pl. Response: Disputed. Defendants have mischaracterized the evidence they are relying on to support this proposed finding of fact. Dr. Fry testified that there were at least three general methods for injecting additives into coal combustion flue gas: adding the additive to coal before the coal is introduced into the furnace; adding the additive into the flue gas of the combustion zone; and adding the additive into the flue gas in the ductwork of the boiler downstream of the combustion zone. Dr. Fry testified that all three methods are considered "injecting . . . into flue gas." Dr. Fry explained that a POSA would be knowledgeable concerning all three methods, and would understand that the various methods were interchangeable and could be considered "injecting . . . into flue gas" as required by the claims of the '692 Patent. Dkt. 103, ¶¶ 419-420; 424–426, 431; PFF ¶ 907.

The '692 Patent explains that the inventive process "can be adjusted in numerous advantageous ways, e.g., by varying (i) droplet size during injection into flue gas, (ii) concentration of thermolabile species, and (iii) dosing level, etc." Dr. Fry has explained that "it primarily is the case that factors such as concentration and dosing levels are varied when a different injection site is being considered [for example, injecting into the combustion zone flue gas with the coal directly versus directly injecting the additive itself in the upper furnace.]" Dkt. 103, ¶¶ 416-417.

The inventor of the Chem-Mod Process, Mr. Comrie, agreed that injecting in with the coal, or injecting alone into the combustor, or injecting further downstream, all were equivalent ways to introduce additives to flue gas, and that one only might need to change the dosing level depending upon which approach used. Dkt. 103, ¶ 418.

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs' stated

additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416–418.

155. *One method for introducing chemicals into coal-burning systems was to “pre-treat” coal by applying chemicals or other additives to the coal, or mixing chemicals with coal, before the coal was introduced into the boiler for combustion.*

D.I. # 75, First Wilcox Report ¶ 61; D.I. # 76, Second Wilcox Report ¶¶ 54–57; D.I. # 74, Third Fry Report ¶ 53.

Pl. Response: Disputed. Plaintiffs agree that one method of introducing chemicals into coal burning systems is to apply the chemicals to the coal before injecting those chemicals, mixed with the coal, into the furnace of a boiler. However, in the prior art, this was understood to be one method of “injecting into flue gas.” Dkt. 103, PFF ¶ 247, U.S. Patent No. 6,372,187 (“Madden”).

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the asserted fact. Further, Pl. PFF ¶ 247 and Madden do not address the introduction of chemicals into coal-burning systems. D.I. # 134, Def. Resp. to Pl. PFF ¶ 247.

156. *The second method for introducing chemicals into coal-burning systems was to inject such chemicals into the combustion zone of the furnace.*

D.I. # 75, First Wilcox Report ¶ 61; D.I. # 76, Second Wilcox Report ¶¶ 54–57; D.I. # 74, Third Fry Report ¶ 53.

Pl. Response: Disputed. Plaintiffs agree that one method of introducing chemicals into coal burning systems is to inject such chemicals into the combustion zone of the furnace. However, in the prior art, this was understood to be one method of “injecting into flue gas.” Dkt. 103, PFF ¶ 247, U.S. Patent No. 6,372,187 (“Madden”).

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the asserted fact. Further, Pl. PFF ¶ 247 and Madden do not address the introduction of chemicals into coal-burning systems. D.I. # 134, Def. Resp. to Pl. PFF ¶ 247.

157. *The third method for introducing chemicals into coal-burning systems was to inject such chemicals into the flue gas, typically in the flue gas ductwork.*

D.I. # 75, First Wilcox Report ¶ 61; D.I. # 76, Second Wilcox Report ¶¶ 53–57; D.I. # 74, Third Fry Report ¶ 53.

Pl. Response: Disputed. Defendants have mischaracterized the evidence they are relying on to support this proposed finding of fact. Dr. Fry testified that there were at least three general methods for injecting additives into coal combustion flue gas: adding the additive to coal before the coal is introduced into the furnace; adding the additive into the flue gas of the combustion zone; and adding the additive into the flue gas in the ductwork. Dr. Fry testified that all three methods are considered “injecting . . . into flue gas.” Dr. Fry explained that a POSA would

be knowledgeable concerning all three methods, and would understand that the various methods were interchangeable and could be considered “injecting . . . into flue gas” as required by the claims of the ’692 Patent. Dkt. 103, ¶¶ 419-420; 424–426, 431; PFF 907.

The ’692 Patent explains that the inventive process “can be adjusted in numerous advantageous ways, e.g., by varying (i) droplet size during injection into flue gas, (ii) concentration of thermolabile species, and (iii) dosing level, etc.” Dr. Fry has explained that “it primarily is the case that factors such as concentration and dosing levels are varied when a different injection site is being considered.” Dkt. 103, ¶¶ 416-417.

The inventor of the Chem-Mod Process, Mr. Comrie, agreed that injecting in with the coal, or injecting alone into the combustor, or injecting further downstream, all were equivalent ways to introduce additives to flue gas, and that one only might need to change the dosing level depending upon which approach used. Dkt. 103, ¶ 418.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs’ stated additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416–418.

158. *Plaintiffs’ expert witness, Andrew Fry, acknowledged that some types of additives could be introduced into the coal plant using any of the three foregoing methods, but others could not.*

D.I. # 73, Second Fry Report ¶ 64 (“It is my opinion that a POSA would be expected to be knowledgeable about [three] . . . equally acceptable alternative methods.”); D.I. # 71, Fry Dep. 68:11–69:20 (opining that an “aqueous solution containing alkali solids” could be injected into the flue gas ductwork and could be sprayed onto coal before it entered the furnace, but could not be injected into the combustor itself), Fry Dep. 103:18–104:21 (opining that it would be “nonsensical” for “extract[ed] unburned coal” to be “reinject[ed] back into the combustion zone”).

Pl. Response: Disputed. Dr. Fry opined that the phrase “injecting into flue gas” would have been understood by a POSA to encompass at least three ways of injecting additives into flue gas resulting from the combustion of coal, where these three methods included: (1) mixing the additive with coal before injecting the additive with the coal into the combustion zone; (2) injecting the additive into the combustion zone; or (3) injecting it into the flue gas downstream of the combustion zone. Dkt. 74, Fry’s Reply Report on Infringement, ¶¶ 53, 63.

Def. Reply: Undisputed. The response does not dispute that Fry identified three methods for introducing additives to coal combustion systems.

159. *A POSA would understand that adding chemicals to the combustion zone is substantially different than adding them to the flue gas, requiring different*

technologies, and—given the different gas composition and temperature—likely having different effects.

D.I. # 76, Second Wilcox Report ¶ 38.

Pl. Response: Disputed. Defendants proposed finding of fact is vague with respect to “substantially different.” Defendants have mischaracterized the evidence they are relying on to support this proposed finding of fact. Dr. Fry testified that there were at least three general methods for injecting additives into coal combustion flue gas: adding the additive to coal before the coal is introduced into the furnace; adding the additive into the flue gas of the combustion zone; and adding the additive into the flue gas in the ductwork of the boiler downstream of the combustion zone. Dr. Fry testified that all three methods are considered “injecting . . . into flue gas.” Dr. Fry explained that a POSA would be knowledgeable concerning all three methods, and would understand that the various methods were interchangeable and could be considered “injecting . . . into flue gas” as required by the claims of the ’692 Patent. Dkt. 103, ¶¶ 419-420; 424-426, 431; PFF 907.

The ’692 Patent explains that the inventive process “can be adjusted in numerous advantageous ways, e.g., by varying (i) droplet size during injection into flue gas, (ii) concentration of thermolabile species, and (iii) dosing level, etc.” Dr. Fry has explained that “it primarily is the case that factors such as concentration and dosing levels are varied when a different injection site is being considered [for example, injecting into the combustion zone flue gas with the coal directly versus directly injecting the additive itself in the upper furnace.].” Dkt. 103, ¶¶ 416-417.

The inventor of the Chem-Mod Process, Mr. Comrie, agreed that injecting in with the coal, or injecting alone into the combustor, or injecting further downstream, all were equivalent ways to introduce additives to flue gas, and that one only might need to change the dosing level depending upon which approach used. Dkt. 103, ¶ 418.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs’ stated additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416-418.

160. *The term “injecting . . . into . . . flue gas” is a term of art that refers to one of the known, specific methodologies used at the time of the invention to treat emissions from coal-fired power plants.*

D.I. # 76, Second Wilcox Report ¶ 20.

Pl. Response: Disputed. Defendants have requested that the Court construe the term “injecting . . . into the flue gas,” and the parties have proposed different constructions for this term. Dkt. 82, Amended Joint Table of Terms Requiring Construction, pp. 2-3. Defendants have mischaracterized the evidence they are relying on to support this proposed finding of fact. Dr. Fry testified that there were at least three general methods for injecting additives into coal combustion flue gas: adding the additive to coal before the coal is introduced into the furnace; adding the additive into the flue gas of the combustion zone; and adding the

additive into the flue gas in the ductwork of the boiler downstream of the combustion zone. Dr. Fry testified that all three methods are considered “injecting . . . into flue gas.” Dr. Fry explained that a POSA would be knowledgeable concerning all three methods, and would understand that the various methods were interchangeable and could be considered “injecting . . . into flue gas” as required by the claims of the ’692 Patent. Dkt. 103, ¶¶ 419-420; 424–426, 431; PFF 907.

The ’692 Patent explains that the inventive process “can be adjusted in numerous advantageous ways, e.g., by varying (i) droplet size during injection into flue gas, (ii) concentration of thermolabile species, and (iii) dosing level, etc.” Dr. Fry has explained that “it primarily is the case that factors such as concentration and dosing levels are varied when a different injection site is being considered [for example, injecting into the combustion zone flue gas with the coal directly versus directly injecting the additive itself in the upper furnace.]” Dkt. 103, ¶¶ 416-417.

Indeed, the intrinsic evidence proves that a POSA at the time would have understood the phrase “injecting into flue gas” to encompass all three methods of introducing an additive into coal combustion flue gas, as shown, for example, by Madden. Dkt. 103, PFF ¶ 247, U.S. Patent No. 6,372,187 (“Madden”). Dkt. 74, Fry Reply Report, ¶¶ 53, 63.

The inventor of the Chem-Mod Process, Mr. Comrie, agreed that injecting in with the coal, or injecting alone into the combustor, or injecting further downstream, all were equivalent ways to introduce additives to flue gas, and that one only might need to change the dosing level depending upon which approach used. Dkt. 103, ¶ 418.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs’ stated additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416–418.

161. *A POSA in the field of the ’692 Patent would expect to see a disclosure about the use of a chemical in a coal-burning power plant to teach which of the methods of introduction would work for that class of chemicals.*

D.I. # 75, First Wilcox Report ¶¶ 108–109; D.I. # 76, Second Wilcox Report ¶ 54.

Pl. Response: Disputed. Plaintiffs object to this finding of fact as argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”).

Defendants have mischaracterized the evidence they are relying on to support this proposed finding of fact. Dr. Fry testified that there were at least three general methods for injecting additives into coal combustion flue gas: adding the additive to coal before the coal is introduced into the furnace; adding the additive into the flue gas of the combustion zone; and adding the additive into the flue gas in the ductwork. Dr. Fry testified that all three methods are considered “injecting . . . into flue gas.” Dr. Fry explained that a POSA would be knowledgeable

concerning all three methods, and would understand that the various methods were interchangeable and could be considered “injecting . . . into flue gas” as required by the claims of the ’692 Patent. Dkt. 103, ¶¶ 419-420; 424-426, 431; PFF 907.

The ’692 Patent explains that the inventive process “can be adjusted in numerous advantageous ways, e.g., by varying (i) droplet size during injection into flue gas, (ii) concentration of thermolabile species, and (iii) dosing level, etc.” Dr. Fry has explained that “it primarily is the case that factors such as concentration and dosing levels are varied when a different injection site is being considered.” Dkt. 103, ¶¶ 416-417.

The inventor of the Chem-Mod Process, Mr. Comrie, agreed that injecting in with the coal, or injecting alone into the combustor, or injecting further downstream, all were equivalent ways to introduce additives to flue gas, and that one only might need to change the dosing level depending upon which approach used. Dkt. 103, ¶ 418.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs’ stated additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416-418. Further, Def. PFF ¶ 161 does not mischaracterize the cited evidence. The evidence cited by Plaintiffs is consistent with Wilcox’s testimony that a POSA would expect “specificity . . . if the ’692 Patent were to contemplate pretreating coal and/or injecting into the combustor.” D.I. # 75, First Wilcox Report ¶ 108.

162. *Plaintiffs’ expert witness, Andrew Fry, testified that “magnesium oxide is another example of a furnace sorbent injection . . . and the purpose” “was to change the ash characteristics” “typically [in] the fly ash.” Fry responded yes when asked, “you said you were aware of this magnesium oxide being used as a coal additive” and when asked, “were you also aware of it being injected into the furnace.”*

D.I. # 71, Fry Dep. 94:8-20.

Pl. Response: Disputed. Defendants mischaracterize Dr. Fry’s testimony. At the cited testimony, Dr. Fry did not testify that “magnesium oxide is another example of a furnace sorbent injection.” Rather, Dr. Fry testified that “the purpose of magnesium oxide was not to reduce Sox, it was to change the ash characteristics. For example, Dr. Fry’s testimony reads as follows:

Q. The magnesium oxide is another example of a furnace sorbent injection; but the purpose of this one was not to reduce SOx, it was to change the ash characteristics?

12 A. Yes.

Dkt. 71, Fry Dep. 94:8-12

Def. Reply: Undisputed. Def. PFF ¶ 162 does not mischaracterize Fry’s testimony, as is evident by comparing Def. PFF ¶ 162 to the language of the Fry deposition. Plaintiffs’ added quotations do not rebut the stated fact.

163. *Prior art patents directed to emissions reductions and cited in the '692 Patent — including those of the named inventor on the '692 Patent— specified which introduction methods were acceptable for each treatment chemical.*

D.I. # 75, First Wilcox Report ¶ 108 ; Mark Decl. Ex. 48, '235 Patent 10:67–12:3 (discussing mixing lime plus lime fluxing additive plus coal “either by mixing them in their solid form prior to injection into the fossil fuel combustor, and/or by injecting them into a combustor with sufficient turbulence. . .”); Mark Decl. Ex. 52, '282 Patent 1:9–1:11 (claiming inventions for reducing nitrogen oxides from combustion flue gas “by injecting an additive directly into the combustor, combustion zone or into the flue gas.”); Mark Decl. Ex. 50, '805 Patent 5:46–50 (“Preferably the above mentioned additive is incorporated into the fuel but the additive containing the thermolabile compound may be injected into either the combustion zone or the flue.”).

Pl. Response: Disputed. Defendants have mischaracterized the evidence they are relying on to support this proposed finding of fact. Defendants’ proposed finding of fact contains attorney argument, which is not proper for a proposed fact. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”).

The evidence demonstrates that the referenced patents do not specify which introduction methods were acceptable for each treatment chemical. For example, particular claims of the '235 Patent read as follows:

Claim 36: The method as claimed in claim 1, wherein the additive is injected into the combustion zone.

Claim 40: The method as claimed in claim 37, wherein the additive is mixed with the fossil fuel before furnace injection.

Claim 41: The method as claimed in claim 38, wherein the additive is mixed with the fossil fuel before furnace injection.

Dkt. 103, ¶¶ 424–426.

Dr. Fry testified that there were at least three general methods for injecting additives into coal combustion flue gas: adding the additive to coal before the coal is introduced into the furnace; adding the additive into the flue gas of the combustion zone; and adding the additive into the flue gas in the ductwork. Dr. Fry testified that all three methods are considered “injecting . . . into flue gas.” Dr. Fry explained that a POSA would be knowledgeable concerning all three methods, and would understand that the various methods were interchangeable and could be considered “injecting . . . into flue gas” as required by the claims of the '692 Patent. Dkt. 103, ¶¶ 419–420; 424–426, 431; PFF 907.

The '692 Patent explains that the inventive process “can be adjusted in numerous advantageous ways, e.g., by varying (i) droplet size during injection into flue gas, (ii) concentration of thermolabile species, and (iii) dosing level, etc.” Dr. Fry has explained that “it primarily is the case that factors such as concentration and

dosing levels are varied when a different injection site is being considered.” Dkt. 103, ¶¶ 416-417.

The inventor of the Chem-Mod Process, Mr. Comrie, agreed that injecting in with the coal, or injecting alone into the combustor, or injecting further downstream, all were equivalent ways to introduce additives to flue gas, and that one only might need to change the dosing level depending upon which approach used. Dkt. 103, ¶ 418.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs’ stated additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416–418. Further, Def. PFF ¶ 164 does not mischaracterize the cited evidence. The cited claims of the ’235 Patent discuss acceptable methods of “treating fossil fuel for combustion” with reference to claim 1 of the ’235 Patent, which describes a single additive that “contains a lime flux that lowers the melting point of said lime” D.I. # 104, Klingman Decl. Ex. 60, ’235 Patent, at Claim 1. Therefore, Plaintiffs’ assertion that the claims dispute the stated fact that the ’235 Patent lays out “acceptable methods” for application of a particular treatment chemical is unsupported and incorrect.

164. *Distinction among, and recognition of, the three methods for introducing chemicals persisted after the filing date for the ’692 Patent and through today.*

D.I. # 76, Second Wilcox Report ¶¶ 55–57.

Pl. Response: Disputed. Defendants have mischaracterized the evidence they are relying on to support this proposed finding of fact. Dr. Fry testified that there were at least three general methods for injecting additives into coal combustion flue gas: adding the additive to coal before the coal is introduced into the furnace; adding the additive into the flue gas of the combustion zone; and adding the additive into the flue gas in the ductwork. Dr. Fry testified that all three methods are considered “injecting . . . into flue gas.” Dr. Fry explained that a POSA would be knowledgeable concerning all three methods, and would understand that the various methods were interchangeable and could be considered “injecting . . . into flue gas” as required by the claims of the ’692 Patent. Dkt. 103, ¶¶ 419-420; 424–426, 431; PFF 907.

The ’692 Patent explains that the inventive process “can be adjusted in numerous advantageous ways, e.g., by varying (i) droplet size during injection into flue gas, (ii) concentration of thermolabile species, and (iii) dosing level, etc.” Dr. Fry has explained that “it primarily is the case that factors such as concentration and dosing levels are varied when a different injection site is being considered.” Dkt. 103, ¶¶ 416-417.

The inventor of the Chem-Mod Process, Mr. Comrie, agreed that injecting in with the coal, or injecting alone into the combustor, or injecting further downstream, all were equivalent ways to introduce additives to flue gas, and that one only might need to change the dosing level depending upon which approach used. Dkt. 103, ¶ 418.

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs' stated additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416–418.

165. *Activated carbon is partially combusted coal or charcoal.*

D.I. # 75, First Wilcox Report ¶ 53.

Pl. Response: Disputed. Defendants' own expert disputes this proposed finding: "Activated carbon can be produced from a number of carbon-based materials including, but not limited to coal, wood, and coconut shells."

Dkt. No. 75, First Wilcox Report ¶ 53.

Def. Reply: Undisputed. The response asserts an additional fact, but it raises no dispute of the proposed fact.

166. *A POSA in 2001 would have known that one method for reducing mercury emissions in coal-fired power plants was activated carbon injection.*

D.I. # 76, Second Wilcox Report ¶ 69; D.I. # 75, First Wilcox Report ¶ 53; D.I. #72, First Fry Report ¶ 66.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

167. *In activated carbon injection, activated carbon is injected into the flue gas, typically through lances directed into the flue gas ductwork.*

D.I. # 75, First Wilcox Report ¶ 53; D.I. # 76, Second Wilcox Report ¶ 53.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

168. *Lances are long hollow cylinders that may be used to inject material into flue gas.*

D.I. # 76, Second Wilcox Report ¶ 53.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

169. *Because ACI involves the use of combustible material (i.e., carbon), it cannot be added to the coal before combustion or injected directly in the combustion zone of the furnace.*

D.I. # 73, Fry Dep. 75:23–77:4.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

VIII. '692 PATENT

A. Claims

170. *As initially filed, the '692 Patent Application contained 18 claims, including one independent claim, which read:*

A method of treating coal combustion flue gas containing mercury, comprising: injecting one of molecular halogen and a thermolabile molecular halogen precursor into said flue gas to effect oxidation of elemental mercury to a mercuric halide and providing one of a liquid and alkaline solid particles in said flue gas in order to adsorb at least a portion of said mercuric halide.

D.I. # 35-6, Utility Patent Application No. 10/073986 (Feb. 14, 2002), at 227–228.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

171. *The '692 Patent Application, with amendments, was issued as U.S. Patent No. 6,808,692 on October 26, 2004, titled Enhanced Mercury Control in Coal-Fired Power Plants.*

D.I. # 35-1, '692 Patent.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

172. *As issued, the '692 Patent had claims directed to the injection of a variety of halogens and halogen precursors.*

D.I. # 35-1, '692 Patent.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document and is incomplete. The claimed invention is defined by the claims of the Patent as they exist following the reexamination.

Def. Reply: Undisputed. Def. PFF ¶ 172 does not mischaracterize the '692 Patent, as is evident by comparing Def. PFF ¶ 172 to the language of the patent.

173. *As reissued, the '692 Patent teaches the use of certain bromide compounds—referred to as “thermolabile molecular bromine precursors”—to treat coal combustion flue gas.*

D.I. # 35-1, '692 Patent Inter Partes Reexamination Certificate.

Pl. Response: Disputed. Defendants' proposed finding of fact is incomplete, and therefore misleading. For example, Claim 1 of the '692 Patent claims: A method of treating coal combustion flue gas containing mercury, comprising: injecting a bromide compound that is a thermolabile molecular bromine precursor into said flue gas to effect oxidation of elemental mercury to a mercuric bromide and providing alkaline solid particles in said flue gas ahead of a particulate collection device, in order to adsorb at least a portion of said mercuric bromide. Dkt. 35-1, '692 Patent at Claim 1; see also Claim 19.

Def. Reply: Undisputed. Def. PFF ¶ 173 does not mischaracterize the '692 Patent, as is evident by comparing Def. PFF ¶ 173 to the language of the patent.

174. *Both independent asserted claims of the '692 Patent, after reexamination, require the injection of a bromide compound that is a thermolabile molecular bromine precursor into the flue gas, and the oxidation of elemental mercury to mercuric bromide. All of the asserted claims depend from either Claim 1 or Claim 19.*

D.I. # 35-1, '692 Patent at Claims.

Pl. Response: Disputed. Defendants' proposed finding of fact mischaracterize the independent claims of the '692 Patent. For example, claim 1 of the '692 Patent reads as follows:

A method of treating coal combustion flue gas containing mercury, comprising: injecting a bromide compound that is a thermolabile molecular bromine precursor into said flue gas to effect oxidation of elemental mercury to a mercuric bromide and providing alkaline solid particles in said flue gas ahead of a particulate collection device, in order to adsorb at least a portion of said mercuric bromide.

Dkt. 35-1, '692 Patent at Claim 1; *see also* Claim 19.

Def. Reply: Undisputed. Def. PFF ¶ 174 does not mischaracterize the '692 Patent, as is evident by comparing Def. PFF ¶ 174 to the language of the patent.

175. *Claim 1 of the '692 Patent claims "[a] method of treating coal combustion flue gas containing mercury" that requires, inter alia, "injecting" a bromide compound that is a thermolabile molecular bromine precursor "into said flue gas . . . ahead of a particulate collection device."*

D.I. # 35-1, '692 Patent at Claim 1.

Pl. Response: Disputed. Defendants' proposed finding of fact is incomplete, and therefore misleading. Claim 1 of the '692 Patent claims: "A method of treating coal combustion flue gas containing mercury, comprising: injecting a bromide compound that is a thermolabile molecular bromine precursor into said flue gas to effect oxidation of elemental mercury to a mercuric bromide and providing alkaline solid particles in said flue gas ahead of a particulate collection

device, in order to adsorb at least a portion of said mercuric bromide.” Dkt. 35-1, ’692 Patent at Claim 1; *see also* Claim 19.

Def. Reply: Undisputed. Def. PFF ¶ 175 does not mischaracterize the ’692 Patent, as is evident by comparing Def. PFF ¶ 175 to the language of the patent.

B. Disclosure

176. *The ’692 Patent Application includes three examples purporting to “illustrate the flexibility of the current invention and a rational, non-limiting basis for controlling mercury emissions via enhanced conversion of mercury to alkali adsorbable mercuric halide, especially mercuric chloride.”*

D.I. # 35-6, Utility Patent Application No. 10/073986 (Feb. 14, 2002), at 219–225.

Pl. Response: Disputed. Defendants’ proposed finding of fact is argumentative, especially with respect to the use of the term “purporting.” *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”) Further, Defendants use of the term “purporting” has resulted in a mischaracterization of the three examples in the ’692 Patent. The ’692 Patent states the following: “The following examples illustrate the flexibility of the current invention and a rational, non-limiting basis for controlling mercury emissions via enhanced conversion of mercury to alkali adsorbable mercuric halide, especially mercuric chloride.” Dkt. 35-1, ’692 Patent at 5:29–31.

Def. Reply: Undisputed. Def. PFF ¶ 176 does not mischaracterize the ’692 Patent application, as is evident by comparing Def. PFF ¶ 176 to the language of the patent application.

177. *None of the three examples in the ’692 Patent Application involves original experiments.*

D.I. # 35-6, Utility Patent Application No. 10/073986 (Feb. 14, 2002), at 219–225; D.I. # 75, First Wilcox Report ¶ 106.

Pl. Response: Disputed. Defendants’ proposed finding of fact is vague, as it does not define “original experiments.” Defendants’ proposed finding of fact is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). The proposed finding of fact is also vague in its use of the word “involves.”

Def. Reply: Undisputed. Plaintiffs’ response does not raise a dispute of the stated fact.

178. *The ’692 Patent Application does not include a single actual experiment concerning thermolabile molecular bromine precursors.*

D.I. # 35-6, Utility Patent Application No. 10/073986 (Feb. 14, 2002), at 219–225; D.I. # 75, First Wilcox Report ¶ 106.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

179. *The '692 Patent Application cites an earlier Oehr patent, No. 6,250,235 that teaches the use of coal additives.*

D.I. # 35-6, Utility Patent Application No. 10/073986 (Feb. 14, 2002), at 213–214; D.I. # 75, First Wilcox Report ¶ 108.

Pl. Response: Disputed. This proposed finding of fact is vague and unclear in its characterization of what U.S. Patent No. 6,250,235 “teaches.” Because the proposed finding of fact is conclusory and vague in its characterization of the U.S. Patent No. 6,250,235, the Court should not adopt it.

Def. Reply: Undisputed. Plaintiffs’ response is argumentative and states a legal conclusion, and does not dispute the asserted fact.

180. *The '692 Patent does not use the term “injecting . . . into the flue gas” to describe the earlier '235 Patent technology, but rather expressly characterizes that earlier '235 Patent as using a coal additive.*

D.I. # 35-1, '692 Patent at 2:37–45 (describing '235 Patent as teaching “the addition of a fossil fuel and additive in a combustion zone”), 7:29–37 (describing '235 Patent teaching of use of a calcium oxide “additive” to coal), 9:36 (same); D.I. # 75, First Wilcox Report ¶ 111.

Pl. Response: Disputed. The proposed finding of fact, as phrased, suggests that the '235 patent does not disclose “injecting . . . into flue gas,” which is an issue that is disputed by the parties. Dkt. 73, Fry Second Report, ¶¶ 141, 158, 159. To the extent this proposed fact is intended to characterize the '692 Patent’s written description as not including the injection method of the '235 Patent in the '692 Patent’s teaching of injecting into flue gas, this is a contested issue of fact on which there is conflicting evidence. Defendants contend that a coal additive is not injected into flue gas, while Plaintiffs contend that a coal additive is injected into flue gas.

Therefore, as phrased, this proposed fact attempts to characterize what the '692 Patent teaches in a way that is contested with evidence, such as the above-cited opinion from Dr. Fry.

Def. Reply: Undisputed. Plaintiffs’ response is argumentative and the cited materials do not dispute the asserted fact. Plaintiffs’ response contains argument regarding the '692 Patent and the parties’ construction of its claims without responding to any part of Def. PFF ¶ 180.

181. *The '692 Patent Application teaches the use of “thermolabile molecular bromine precursors” at the temperatures found after the combustion zone of a coal-burning power plant.*

D.I. # 35-6, Utility Patent Application No. 10/073986 (Feb. 14, 2002), at 216 (“after the ‘superheater’ section of a coal-fired plant”), 17 (“thermolabile molecular bromine precursors”).

Pl. Response: Disputed. This proposed fact is undefined in its use of the phrase “temperatures found after the combustion zone of a coal burning plant.” As such, it should not be adopted as a fact by the Court. Furthermore, as phrased, the proposed fact can be read to suggest that the patent teaches the use of a thermolabile molecular bromine precursor *only* at temperatures found after combustion zone and not also at temperatures found in the combustion zone. While it is true that the two preferred embodiments described in the ’692 specification reference injection of the precursor into flue gas downstream of the combustion zone, a POSA would understand the written description of the ’692 Patent to be teaching that these described embodiments were only “preferable” sites for injection, and that the invention encompassed injection into flue gas elsewhere in the boiler, inclusive of the combustion zone. *See, e.g.,* Dkt. 73, Fry Second Report, ¶¶ 97, 98, 99, 102, 140. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C).

Def. Reply: Undisputed. Plaintiffs’ response is argumentative and states a legal conclusion, and the cited materials do not dispute the stated fact.

182. *The only bromide compound explicitly named in the ’692 Patent is a thermolabile molecular bromine precursor is magnesium bromide, MgBr₂.*

D.I. # 35-1, ’692 Patent at 4:25–40.

Pl. Response: Disputed. This proposed finding of fact is vague in its use of the phrase “explicitly named.” The ’692 Patent discloses calcium bromide by disclosing bromide salts (see D.I. # 35-1, ’692 Patent at 4:60-62) and indicating that “[m]olecular halogen precursors containing calcium are particularly desirable....” (see D.I. # 35-1, ’692 Patent at 4:19-20). To the extent this proposed finding of fact is intended to suggest that the ’692 does not teach use of calcium bromide, the above citations from the ’692 Patent specification dispute that.

Def. Reply: Undisputed. The response asserts an additional fact, but it raises no dispute of the proposed fact. The passages cited by Plaintiffs mentioning “bromide salts” and “molecular halogen precursors containing calcium” are not explicit mentions of bromide compounds, and therefore do not dispute the stated fact that magnesium bromide is the only bromide compound explicitly named in the ’692 Patent.

183. *As reissued, the ’692 Patent describes “injecting” those bromide compounds “into the flue gas” to effect oxidation of elemental mercury.*

D.I. # 35-1, ’692 Patent Inter Partes Reexamination Certificate at 2:42–42.

Pl. Response: Disputed. Defendants’ proposed finding of fact is incomplete, and therefore misleading. For example, Claim 1 of the ’692 Patent claims: “A method of treating coal combustion flue gas containing mercury, comprising: injecting a bromide compound that is a thermolabile molecular bromine precursor

into said flue gas to effect oxidation of elemental mercury to a mercuric bromide and providing alkaline solid particles in said flue gas ahead of a particulate collection device, in order to adsorb at least a portion of said mercuric bromide.” Dkt. 35-1, ’692 Patent at Claim 1.

Def. Reply: Undisputed. Def. PFF ¶ 183 is not incomplete as evidenced by comparing Def. PFF ¶ 183 to Claim 1 of the ’692 Patent. Further, Plaintiffs have not cited evidence that disputes the stated fact.

184. *Calcium bromide is a calcium compound.*

D.I. # 72, First Fry Report ¶ 267.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

185. *The ’692 Patent’s teaching on the subject of bromide salts such as CaBr₂ is limited to the statement that “[m]olecular bromine can be generated by thermal decomposition of a dehydrated bromide salt solution in the presence of oxygen.”*

D.I. # 35-1, ’692 Patent at 4:60-62.

Pl. Response: Disputed. The ’692 Patent teaches various other things about bromide salts, such as identifying an example of one, noting that calcium salts are particularly favored for use in the inventions, identifying a decomposition temperature for an exemplary one, that when injected into flue gas in a power plant they can result in the formation of molecular bromine, that their cost can be different from that of calcium compounds, etc. Dkt. 35-1, ’692 Patent at 4:19-20, Table 1, 3:66-4:21, 5:25-28.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact because none of the evidence cited by Plaintiffs makes mention of bromide salts or calcium bromide.

186. *A POSA would recognize that each of the three examples in the ’692 Patent describes the introduction of the thermolabile molecular bromine precursor by injection into the flue gas, and not by using any of the other two known emission-reducing methods discussed previously.*

D.I. # 76, Second Wilcox Report ¶ 61; D.I. # 35-1, ’692 Patent at 7:60-65 (“injection of a molecular halogen source . . . in the economizer/ESP section of this combustor”), 8:41-43 (referencing “injection of a sorbent such as activated carbon,” which can only be injected after the combustion chamber or it would be combusted, defeating the purpose).

Pl. Response: Disputed. This proposed fact is vague and ambiguous in its use of the phrase “the three examples.” The ’692 Patent contains numerous examples of various types of information. The proposed fact is also vague and ambiguous in its reference to “injecting into the flue gas,” as the meaning of that phrase is disputed between the parties, and the proposed fact does not define the meaning of the phrase. It is also vague and ambiguous in its use of the phrase “the other

two known emission-reducing methods discussed previously,” as it does not identify what methods it refers to or where they were “discussed.” To the extent that the proposed fact suggests that other emissions-reducing methods are not “injecting into flue gas,” the question of whether pretreating coal and/or injecting a chemical into the combustion zone separate from coal are “injecting into flue gas” is disputed by the parties.

Dr. Fry testified that there were at least three general methods for injecting additives into coal combustion flue gas: adding the additive to coal before the coal is introduced into the furnace; adding the additive into the flue gas of the combustion zone; and adding the additive into the flue gas in the ductwork of the boiler downstream of the combustion zone. Dr. Fry testified that all three methods are considered “injecting . . . into flue gas.” Dr. Fry explained that a POSA would be knowledgeable concerning all three methods, and would understand that the various methods were interchangeable and could be considered “injecting . . . into flue gas” as required by the claims of the ’692 Patent. Dkt. 103, ¶¶ 419-420; 424–426, 431; PFF ¶ 907. At a minimum, there is evidence that injecting into the combustion zone is injecting into flue gas. *See, e.g.*, Dkt. 73, Fry Second Report, ¶¶ 97, 98, 99, 102, 140. As such, to the extent this proposed fact is comprehensible, it appears to state a claim construction argument rather than a fact, and is disputed by the opinion of Dr. Fry. *See also* Plaintiffs’ Brief in Opposition to Defendants’ Motion for Summary Judgment at Section II (D).

The ’692 Patent explains that the inventive process “can be adjusted in numerous advantageous ways, e.g., by varying (i) droplet size during injection into flue gas, (ii) concentration of thermolabile species, and (iii) dosing level, etc.” Dr. Fry has explained that “it primarily is the case that factors such as concentration and dosing levels are varied when a different injection site is being considered [for example, injecting into the combustion zone flue gas with the coal directly versus directly injecting the additive itself in the upper furnace.]” Dkt. 103, ¶¶ 416-417.

Indeed, the intrinsic evidence proves that a POSA at the time would have understood the phrase “injecting into flue gas” to encompass all three methods of introducing an additive into coal combustion flue gas, as shown, for example, by Madden. Dkt. 103, PFF ¶ 247, U.S. Patent No. 6,372,187 (“Madden”). Dkt. 74, Fry Reply Report, ¶¶ 53, 63.

The inventor of the Chem-Mod Process, Mr. Comrie, agreed that injecting in with the coal, or injecting alone into the combustor, or injecting further downstream, all were equivalent ways to introduce additives to flue gas, and that one only might need to change the dosing level depending upon which approach used. Dkt. 103, ¶ 418.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs’ stated additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416–418.

187. *In discussing the “combination” of techniques “to further enhance performance,” the ’692 Patent teaches the combination of the calcium oxide coal “additive,” with a “FGD system” for preventing elemental mercury formation inside the flue*

gas desulfurizer, “plus the molecular halogen or thermolabile molecular halogen precursor of the current invention.”

D.I. # 35-1, '692 Patent at 9:35-39; D.I. # 76, Second Wilcox Report ¶ 64.

Pl. Response: Disputed. Defendants have mischaracterized the evidence in an attempt to support their finding of fact. In relevant part, the '692 Patent states:

“For instance, the lime--flux ash fusion additive described in Example 2 above could be combined with the FGD system in Example 3 above plus the molecular halogen or thermolabile molecular halogen precursor of the current invention.”
'692 Patent at 9:35-39.

Dr. Fry opined that he disagrees that a POSA would understand the technology of the current to be the addition of the thermolabile molecular bromine precursor by itself into the flue gas. Dkt. 74, Fry Third Report, ¶ 62.

Def. Reply: Undisputed. Def. PFF ¶ 187 does not mischaracterize the '692 Patent application, as is evident by comparing Def. PFF ¶ 187 to the language of the patent application. Further, the response asserts an additional fact, but it raises no dispute of the proposed fact.

188. *The only exemplar of the claimed process for injecting a halogen compound “into flue gas” in the specification of the '692 Patent involves injecting it into the flue gas ductwork.*

D.I. # 35-1, '692 Patent at 3:66–4:11.

Pl. Response: Disputed. Defendants' proposed finding of fact is directly contradicted by the evidence in the record. U.S. Patent 6,250,235 was mentioned in the '692 Patent. The '235 Patent provides that the additive can be mixed with the coal prior to injection of the coal, or injected into the combustor along with the coal. Dkt. 103, PFF ¶¶ 419-426. Further, U.S. Patent No. 4,729,882 is included in the '692 Patent. The '882 Patent provides models of all three known ways of injecting additives into flue gas. Dkt. 103, PFF ¶¶ 427-431. Dr. Fry explained that a POSA would be knowledgeable concerning all three categories of methods, and would understand that the various categories of methods were interchangeable and could be considered “injecting . . . into flue gas” as required by the claims of the '692 Patent. Dkt. 74, Third Fry Report, ¶¶ 53, 63, 64.

Dr. Fry expressly describes that the specification teaches making adjustments to injection parameters, such as droplet size, concentration and dosing levels that would only be relevant to injecting precursor in the combustion, whether mixed with the coal, or separately. Dkt. 74, ¶ 61.

Def. Reply: Undisputed. Plaintiffs have not cited evidence to dispute the stated fact. Plaintiffs cite teachings from the '235 Patent, the '882 Patent, and their own expert's opinion; none of which disputes the fact that the '692 Patent specification only lists one exemplar of the claimed process for injecting a halogen compound “into flue gas.” Moreover, Plaintiffs' expert witness, Andrew Fry, agrees that the '692 Patent does not explicitly discuss the addition of a thermolabile molecular bromine precursor to coal before combustion, or the addition into the combustion zone along with

coal. D.I. # 71, Fry Dep. 174:8–19.

In any event, Plaintiffs misrepresent the opinion offered by Fry in D.I. # 74, Third Fry Report ¶ 61. Additionally, the '235 Patent does not concern halogen additives. Further, Plaintiffs' reference to the '882 Patent is misleading as that patent distinguishes between three ways of treating a combustion gas stream and only one of those three methods—addition of hydrogen chloride gas to the emission gas—is referenced in the '692 Patent. D.I. # 137, Def. Opp. Br. at 52.

189. *There is no example or teaching in the '692 Patent that thermolabile molecular bromine precursors may be applied to coal.*

D.I. # 35-1, '692 Patent; D.I. # 71, Fry Dep. 174:8–12 (“Oehr provides no examples where the precursor was added to the coal.”).

Pl. Response: Disputed. Defendants' proposed finding of fact is directly contradicted by the evidence in the record. U.S. Patent 6,250,235 was mentioned in the '692 Patent. The '235 Patent provides that the additive can be mixed with the coal prior to injection of the coal, or injected into the combustor along with the coal. Dkt. 103, PFF ¶¶ 419-426. Further, U.S. Patent No. 4,729,882 is included in the '692 Patent. The '882 Patent provides models of all three known ways of injecting additives into flue gas. Dkt. 103, PFF ¶¶ 427-431. Dr. Fry explained that a POSA would be knowledgeable concerning all three categories of methods, and would understand that the various categories of methods were interchangeable and could be considered “injecting . . . into flue gas” as required by the claims of the '692 Patent. Dkt. 74, Third Fry Report, ¶¶ 53, 63, 64.

Dr. Fry expressly describes that the specification teaches making adjustments to injection parameters, such as droplet size, concentration and dosing levels that would only be relevant to injecting precursor in the combustion, whether mixed with the coal, or separately. Dkt. 74, ¶ 61.

Def. Reply: Undisputed. Def. PFF ¶ 189 is not inconsistent with the record as evidenced by comparing Def. PFF ¶ 189 to the '692 Patent. Further, Plaintiffs have not identified any teaching in the '692 Patent regarding application of thermolabile molecular bromine precursors to coal. Finally, Plaintiffs misrepresent the opinion offered by Fry in D.I. # 74, Third Fry Report ¶¶ 53, 63, 64.

190. *There is no example or teaching in the specification of the '692 Patent that thermolabile molecular bromine precursors may be injected into a combustion zone.*

D.I. # 35-1, '692 Patent; D.I. # 71, Fry Dep. 174:13–19 (testifying that there are no examples in the '692 Patent “where the thermolabile molecular bromine precursor is injected into the combustion zone of the boiler along with the coal.”).

Pl. Response: Disputed. Defendants' proposed finding of fact is directly contradicted by the evidence in the record. U.S. Patent 6,250,235 was mentioned in the '692 Patent. The '235 Patent provides that the additive can be mixed with the coal prior to injection of the coal, or injected into the combustor along with

the coal. Dkt. 103, PFF ¶¶ 419-426. Further, U.S. Patent No. 4,729,882 is included in the '692 Patent. The '882 Patent provides models of all three known ways of injecting additives into flue gas. Dkt. 103, PFF ¶¶ 427-431. Dr. Fry explained that a POSA would be knowledgeable concerning all three categories of methods, and would understand that the various categories of methods were interchangeable and could be considered "injecting . . . into flue gas" as required by the claims of the '692 Patent. Dkt. 74, Third Fry Report, ¶¶ 53, 63, 64.

Dr. Fry expressly describes that the specification teaches making adjustments to injection parameters, such as droplet size, concentration and dosing levels that would only be relevant to injecting precursor in the combustion, whether mixed with the coal, or separately. Dkt. 74, ¶ 61.

Def. Reply: Undisputed. Def. PFF ¶ 190 is not inconsistent with the record as evidenced by comparing Def. PFF ¶ 190 to the '692 Patent. Further, Plaintiffs have not cited evidence that disputes the stated fact. Finally, Plaintiffs misrepresent the opinion offered by Fry in D.I. # 74, Third Fry Report ¶¶ 53, 63, 64.

191. *The specification explains that the preferred locations for injecting into "flue gas" are "after the superheater section" or "in the economizer/ESP section of the combustor."*

D.I. # 35-1, '692 Patent, at 3:66-4:3, 7:60-65; D.I. # 76, Second Wilcox Report ¶ 21.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

192. *The '692 Patent does not describe any other injection points besides "after the superheater section" or "in the economizer/ESP section of the combustor."*

D.I. # 35-1, '692 Patent.

Pl. Response: Disputed. Defendants' proposed finding of fact is directly contradicted by the evidence in the record. U.S. Patent 6,250,235 was mentioned in the '692 Patent. The '235 Patent provides that the additive can be mixed with the coal prior to injection of the coal, or injected into the combustor along with the coal. Dkt. 103, PFF ¶¶ 419-426. Further, U.S. Patent No. 4,729,882 is included in the '692 Patent. The '882 Patent provides models of all three known ways of injecting additives into flue gas. Dkt. 103, PFF ¶¶ 427-431. Dr. Fry explained that a POSA would be knowledgeable concerning all three categories of methods, and would understand that the various categories of methods were interchangeable and could be considered "injecting . . . into flue gas" as required by the claims of the '692 Patent. Dkt. 74, Third Fry Report, ¶¶ 53, 63, 64.

Dr. Fry expressly describes that the specification teaches making adjustments to injection parameters, such as droplet size, concentration and dosing levels that would only be relevant to injecting precursor in the combustion, whether mixed with the coal, or separately. Dkt. 74, ¶ 61.

Def. Reply: Undisputed. Def. PFF ¶ 192 is not inconsistent with the record as evidenced by comparing Def. PFF ¶ 192 to the '692 Patent. Further, Plaintiffs have not cited evidence that disputes the stated fact. Finally, Plaintiffs misrepresent the opinion offered by Fry in D.I. # 74, Third Fry Report ¶¶ 53, 63, 64.

193. *As Plaintiffs' expert witness Andrew Fry, agreed, the terms "coal combustor flue gas" and "coal combustion flue gas" are used interchangeably in the '692 Patent.*

D.I. # 71, Fry Dep. 184:20–24 ("Q: So again, is it your understanding that coal combustor flue gas is synonymous with coal combustion flue gas? A. I read this to be the same..."), 184:25–185:18 ("Q: And my question again is . . . whether your understanding is that coal combustor flue gas is in fact the same as coal combustion flue gas. . . A. I don't see any difference in this reference.").

Pl. Response: Disputed. Defendants have mischaracterized Dr. Fry's testimony in order to support their proposed finding of fact. It is clear from Dr. Fry's testimony, that he is providing testimony with respect to a particular document, and not offering opinions about whether "coal combustor flue gas" and "coal combustion flue gas" are used interchangeably in the '692 Patent. Dkt. 71, Fry Dep. 184:20–185:18.

Def. Reply: Undisputed. Def. PFF ¶ 193 does not mischaracterize Fry's testimony, as is evident by comparing Def. PFF ¶ 193 to the language of the Fry deposition. Plaintiffs' added quotations do not rebut the stated fact.

194. *The '692 Patent specification teaches that "coal combustor flue gas" has "typical temperatures" at which mercuric halides have "negative values for the free energy of formation."*

D.I. # 35–1, '692 Patent at 4:66–5:18 ("The conversion of mercury to its mercuric halide forms is thermodynamically favoured [sic] at temperatures typical of coal combustor flue gas . . . as indicated by the negative values for the free energies of formation . . .").

Pl. Response: Disputed. Defendants proposed finding of fact is incorrect and mischaracterizes the plain language of the '692 Patent. The referenced section of the '692 Patent reads as follows:

The conversion of mercury to its mercuric halide forms is thermodynamically favored at temperatures typical of coal combustor flue gas, especially coal combustor flue gas between economizer inlets and [filtration systems]...

[Table 2 omitted]

.... Clearly from table 2, it can be seen that the formation of mercuric chloride from elemental mercury and molecular chlorine is particularly favored between 127 and 527°C typical of post superheater coal combustor flue gas zones.

The '692 Patent is not defining all “coal combustor flue gas,” but is merely discussing the flue gas that is “between economizer inlets and [filtration systems]. Moreover, the patent simply states that the formation of mercuric chloride is “particularly” favored at temperatures typical of “post superheater coal combustor flue gas zones.” This passage does not imply that hotter regions of the power plant do not also contain flue gas. It merely states that that the formation of mercuric chloride is formed when the flue gas is in that temperature range. Dr. Wilcox, expert for Defendants acknowledged that the similar range for mercuric bromide extends at least up to 1000°C. Dkt. 103, PFF ¶¶ 209–211; Dkt. 35–1, '692 Patent at 4:66–5:18. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C)(3)(b)(ii).

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the cited materials do not dispute the stated fact. Defendants’ PFF ¶ 194 does not state that the referenced section of the '692 Patent “defines all coal combustor flue gas” or “implies that hotter regions of the power plant do not contain flue gas.” Finally, Plaintiffs’ characterization of the quoted passage from the '692 Patent is contrary to the cited passage, which, taken in context, refers to Table 2 to show that the “negative values for the free energy of formation of mercuric halides” vary depending on the temperature of combustion gas.

195. *At the high temperatures of the combustion zone, the free energies of formation of the mercuric halides are not “thermodynamically favoured” and do not have “negative values for the free energies of formation.*

D.I. # 35-1, '692 Patent at 4:66–5:1 (“The conversion of mercury to its mercuric halide forms is thermodynamically favoured at temperatures typical of coal combustor flue gas, especially coal combustor flue gas between economizer inlets and ESPs, FGDs, BHs or FFs, as indicated by the negative values for the free energy of formation of mercuric halides. .”), 5:11–19 (Table 2); D. I. # 71, Fry Dep. 194:20–25; D.I. # 75, First Wilcox Report ¶ 110; D.I. # 76, Second Wilcox Report ¶ 22.

Pl. Response: Disputed. Defendants proposed finding of fact is incorrect and mischaracterizes the plain language of the '692 Patent. The referenced section of the '692 Patent reads as follows:

The conversion of mercury to its mercuric halide forms is thermodynamically favored at temperatures typical of coal combustor flue gas, especially coal combustor flue gas between economizer inlets and [filtration systems]...

[Table 2 omitted]

.... Clearly from table 2, it can be seen that the formation of mercuric chloride from elemental mercury and molecular chlorine is particularly favored between 127 and 527°C typical of post superheater coal combustor flue gas zones.

The '692 Patent is not defining all “coal combustor flue gas,” but is merely discussing the flue gas that is “between economizer inlets and [filtration systems]. Moreover, the patent simply states that the formation of mercuric chloride is “particularly” favored at temperatures typical of “post superheater coal combustor flue gas zones.” This passage does not imply that hotter regions of the power

plant do not also contain flue gas. It merely states that that the formation of mercuric chloride is formed when the flue gas is in that temperature range. Dr. Wilcox, expert for Defendants acknowledged that the similar range for mercuric bromide extends at least up to 1000°C. Dkt. 103, PFF ¶¶ 209–211; Dkt. 35–1, ’692 Patent at 4:66–5:18. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C)(3)(b)(ii).

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the cited materials do not dispute the stated fact. Defendants’ PFF ¶ 195 does not state that the referenced section of the ’692 Patent “defines all coal combustor flue gas” or “implies that hotter regions of the power plant do not contain flue gas.” Finally, Plaintiffs’ characterization of the quoted passage from the ’692 Patent is contrary to the cited passage, which, taken in context, refers to Table 2 to show that the “negative values for the free energy of formation of mercuric halides” vary depending on the temperature of combustion gas.

196. *The “free energy of formation” of a compound is a thermodynamic quantity that indicates whether, at equilibrium at a specified temperature, the formation of that compound from its elements is more favored, or the breakdown of that compound into its elements is more favored.*

D.I. # 76, Second Wilcox Report ¶ 23.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact as it is not supported by the referenced evidence. Dr. Wilcox does not opine that “[t]he ‘free energy of formation’ of a compound is a thermodynamic quantity that indicates whether, at equilibrium at a specified temperature, the formation of that compound from its elements is more favored, or the breakdown of that compound into its elements is more favored.” Rather, Dr. Wilcox simply states that “a ‘negative free energy of formation’ for the reaction indicates that it is thermodynamically favored to proceed.” Dkt. 76, Second Wilcox Report ¶ 23.

Def. Reply: Undisputed. The Second Wilcox Report at ¶ 23 supports that “a ‘negative free energy of formation’ for the reaction indicates that it is thermodynamically favored to proceed.” *See also* D.I. # 75, First Wilcox Report ¶ 51 (“Essentially the ‘thermodynamics’ of a chemical reaction compares the energy and entropy of the reactants and the products to determine where the overall equilibrium will lie—*i.e.*, whether the reaction will favor the reactants or the products if the reaction is allowed to proceed and come to equilibrium.”).

197. *The “free energy of formation” of a compound is available from standard published tables.*

D.I. # 76, Second Wilcox Report ¶ 22.

Pl. Response: Disputed. The cited evidence does not support the proposed fact to the extent it refers to any and all “compounds.” The cited evidence merely references the disclosure in the ’692 Patent specification that discusses formation of mercuric halides.

Def. Reply: Undisputed. The Second Wilcox Report at ¶ 22, which includes the ‘692 Patent’s reference to standard published tables disclosing free energy of formation, supports Def. PFF ¶ 197.

198. *For the compound mercuric bromide, the standard reaction for formation from elemental mercury and molecular bromine would be written: $Hg^0 + Br_2 = HgBr_2$.*

D.I. # 63, Oehr Dep. 79:24–80:25.

Pl. Response: Disputed. Defendants have mischaracterized Mr. Oehr’s testimony with respect to their proposed finding of fact. In the referenced testimony, Mr. Oehr was providing, for mercuric bromide, the overall chemical reaction for which he was reporting the delta G:

Q. And so for the mercuric bromide entry, for example --

A. Uh-huh.

Q. -- what would be the overall chemical reaction for which you were reporting the delta G in that table?

A. That would be -- that would be elemental mercury reacts with molecular bromine to create mercuric bromine.

Dkt. 63, Oehr Dep. 80:16–24.

Def. Reply: Undisputed. Def. PFF ¶ 198 does not mischaracterize Oehr’s testimony, as evidenced by comparing Def. PFF ¶ 198 to the section of Oehr’s testimony cited by Defendants. In the cited testimony, Oehr explains that: Elemental mercury (Hg^0) reacts with molecular bromine (Br_2) to create mercuric bromide ($HgBr_2$). Oehr’s deposition transcript misstates Oehr’s testimony to the extent it states that “mercuric bromine” is created; rather, the reaction creates mercuric bromide. Further, the ‘692 Patent supports Def. PFF ¶ 198; the specification reads, “[t]he conversion of mercury to its mercuric halide forms is thermodynamically favoured at temperatures typical of coal combustor flue gas . . . **as indicated by the negative values for the free energy of formation of mercuric halides**, from elemental mercury and molecular halogen. . .” D.I. # 35-1, ‘692 Patent, at 4:66–5:5 (emphasis added).

199. *At a specified temperature, if the free energy of formation of mercuric bromide is negative, the equilibrium of the reaction lies to the right – i.e., formation of mercuric bromide is favored.*

D.I. # 76, Second Wilcox Report ¶¶ 23–24; D.I. # 63, Oehr Dep. 77:5–10.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

200. *The higher the absolute value of its negative free energy of formation, the more strongly favored is the formation of mercuric bromide.*

D.I. # 76, Second Wilcox Report ¶¶ 23–24; D.I. # 63, Oehr Dep. 77:21–78:3.

Pl. Response: Disputed. Defendants’ proposed finding of fact is vague with respect to the use of the language “more strongly favored.” It is unclear what is being compared such that the use of the language “more strongly favored” makes sense in this proposed factor. Moreover, Defendants have mischaracterized the testimony being relied on to support this proposed finding of fact. In particular, Mr. Oehr simply testified that the sentence “[t]he larger the negative free energy of formation, the more likely the reaction is to proceed” was a true statement at the time Mr. Oehr made that statement. It is not clear from Mr. Oehr’s testimony, which simply uses the word “likely” is “more strongly favored” as Defendants assert. Nor is it clear from this testimony whether this statement applies to the “formation of mercuric bromide.” Dkt. 63, Oehr Dep. 77:21–78:3.

Def. Reply: Undisputed. Def. PFF ¶ 200 does not mischaracterize Oehr’s testimony; Plaintiffs have introduced no testimony from Oehr that contradicts the stated fact. Further, Def. PFF ¶ 200 is supported by Wilcox’s testimony, which states that the formation of mercuric bromide is more thermodynamically favored at higher absolute values of negative free energy of formation. D.I. # 76, Second Wilcox Report ¶¶ 23–24.

201. *If the free energy of formation of mercuric bromide is positive, the equilibrium of the reaction lies to the left—i.e., the breakdown of HgBr_2 into Hg^0 and Br_2 is favored.*

D.I. # 76, Second Wilcox Report ¶¶ 23–24.

Pl. Response: Disputed. The cited evidence does not support the proposed finding of fact. As phrased, this proposed finding of fact is ambiguous as to what is meant by “favored.” Whether a reaction is “favored” cannot be determined only as to thermodynamics.

Def. Reply: Undisputed. Def. PFF ¶ 201 is supported by the cited evidence. Wilcox’s testimony states that the formation of mercuric bromide is more thermodynamically favored at higher absolute values of negative free energy of formation. D.I. # 76, Second Wilcox Report ¶¶ 23–24. Further, the ‘692 Patent supports Def. PFF ¶ 201; the specification reads, “[t]he conversion of mercury to its mercuric halide forms is thermodynamically favoured at temperatures typical of coal combustor flue gas . . . *as indicated by the negative values for the free energy of formation of mercuric halides*, from elemental mercury and molecular halogen. . . .” D.I. # 35-1, ‘692 Patent, at 4:66–5:5 (emphasis added).

202. *Table 2 of the ‘692 Patent shows that the free energies of formation of the three mercuric halide compounds discussed in the patent (mercuric chloride, mercuric bromide, and mercuric iodide) are negative at all of the temperatures reported in the table.*

D.I. # 35-1, ‘692 Patent, at 5:11–19 (Table 2).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

203. *The temperatures in Table 2 are much cooler than the gases found in the combustion zone.*

D.I. # 76, Second Wilcox Report ¶¶ 23–25.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

204. *The temperatures in Table 2 are only typical of the flue gas located above the combustion zone.*

D.I. # 76, Second Wilcox Report ¶¶ 23–25.

Pl. Response: Disputed. This proposed fact is vague and incomprehensible in its use of the phrase “above the combustion zone.” It is unclear whether “above” refers to orientation or to regions “downstream” within a power plant. As such, the proposed fact, as written, is disputed for lack of clarity.

Def. Reply: Undisputed. Plaintiffs’ response does not raise a dispute of the stated fact. The proposed fact is not vague, and any claimed ambiguity is readily addressed in the cited evidence.

205. *The free energies of formation for the three compounds shown in Table 2 are only negative (and thus thermodynamically favored to proceed) below about 700 °C (1292 °F) (for mercuric iodide), below about 1000 °C (1832 °F) (for mercuric bromide), and below about 1100 °C (2012 °F) (for mercuric chloride).*

Mark Decl. Ex. 155, NALC00468208 (spreadsheet listing free energies of formation for mercuric halides); D.I. # 76, Second Wilcox Report ¶ 24.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

206. *The statement that “the conversion of mercury to its mercuric halide forms is thermodynamically favored at temperatures typical of coal combustor flue gas” is only true for all three identified mercuric halides if coal combustor flue gas has “typical” temperatures up to about 700 °C (1292 °F).*

D.I. # 76, Second Wilcox Report ¶ 24.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

207. *The statement that “the conversion of mercury to its mercuric halide forms is thermodynamically favored at temperatures typical of coal combustor flue gas” is*

not true for any of the identified mercuric halides if the “typical temperatures” extend above 1100 °C (2012 °F).

D.I. # 76, Second Wilcox Report ¶ 24.

Pl. Response: Disputed. Defendants’ proposed finding of fact is not supported by the specification of the ’692 Patent. Dkt. 35–1, ’692 Patent at 4:66–5:18; *see also* discussion at Defendants’ Proposed Finding of Facts, Nos. 194–195. Moreover, Dr. Wilcox, defendants’ own expert, contradicts this proposed finding of fact. For example, Dr. Wilcox testified that that under Defendants’ construction of “flue gas” (i.e., “the gases in the region from above the combustion zone through the stack outlet that result from the substantially-complete combustion of coal”) that flue gas will exist in the “upper furnace,” where she indicates it will have temperatures as high as 1370°C. She also cites with approval, in support of Defendants’ position that flue gas begins in the upper furnace, statements made by the PTAB indicating that flue gas exists at temperature of “1260°C or higher.” Dkt. 103, PFF ¶¶ 211, 212.

Def. Reply: Undisputed. Def. PFF ¶ 207 is supported by the cited evidence. Plaintiffs do not provide any explanation for why Def. PFF ¶ 207 is unsupported by the specification of the ’692 Patent. Further, Wilcox’s testimony supports the stated fact, as is evident by comparing Def. PFF ¶ 207 to the Second Wilcox Report at ¶ 24. Further, Plaintiffs’ response addresses temperature ranges in different parts of the combustion system, and does not address temperature ranges at which the conversion of mercury to mercuric halide forms is thermodynamically favored.

208. *A POSA would understand the specification to teach that “flue gas” has typical temperatures below those ranges, such that flue gas does not encompass injecting materials into the significantly hotter gases in the combustion zone.*

D.I. # 76, Second Wilcox Report ¶ 24.

Pl. Response: Disputed. Defendants’ proposed finding of fact is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). Defendants’ proposed finding of fact is vague with respect to “below those ranges.” It is unclear what ranges of temperature are being discussed in this proposed fact, and Plaintiffs therefore dispute it. Plaintiffs further dispute that “flue gas does not encompass injecting materials into the significantly hotter gases in the combustion zone.” It is Plaintiffs’ position that flue gas should be defined as “the gas produced during the combustion of coal,” and “injecting” as “introducing under pressure or by use of force.” Plaintiffs further contend that “injecting . . . into said flue gas” (along with similar phrases from the claims of the ’692 Patent) should be construed as “introducing under pressure or by use of force into the gas produced during the combustion of coal.” Dkt. 103, PFF ¶¶ 183–187; Dkt. 72, ¶¶ 82–127. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C).

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and a legal conclusion, and the cited materials do not dispute the stated fact. Paragraph 24 of the Second Wilcox Report states:

[T]he free energy of formation of mercuric iodide becomes positive (and thus not thermodynamically favored to proceed) above about 700 °C (1292 °F), becomes positive for mercuric bromide above about 1000 °C (1832 °F) (and thus not thermodynamically favored to proceed), and becomes positive for mercuric chloride above about 1100 °C (2012 °F) (and thus not thermodynamically favored to proceed). See, e.g., NALC00468208 (listing free energies of formation for mercuric halides). Thus, the statement that “the conversion of mercury to its mercuric halide forms is thermodynamically favored” is true for all three identified halides only up to about 700 °C (1292 °F), and is not true for any of the identified halides above 1100 °C (2012 °F). Accordingly, a POSA would understand the inventor to be teaching that “flue gas” has typical temperatures below those ranges—and, as explained below, that “injecting . . . into said flue gas” requires injecting into gas having a temperature below that range.

D.I. # 76, Second Wilcox Report ¶ 24.

209. *The specification repeatedly uses the term “injecting . . . into said flue gas” to describe the process taught in the patent—injecting the thermolabile molecular bromine precursor directly into the flue gas, rather than using the thermolabile molecular bromine precursor as a coal additive or adding that substance to the combustion zone of the boiler.*

D.I. # 35-1, '692 Patent, at 7:60–65 (“injection of a molecular halogen source . . . in the economizer/ESP section of this combustor”), 8:41–43 (referencing “injection of a sorbent such as activated carbon,” which can only be injected after the combustion chamber or it would be combusted, defeating the purpose); D.I. # 76, Second Wilcox Report ¶ 61.

Pl. Response: Disputed. Defendants’ proposed finding of fact is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). The evidence makes clear that the ’692 Patent discloses at least three general categories of methods for injecting additives into coal combustion flue gas, and is not limited to “injecting the bromine precursor directly into the flue gas, rather than using the thermolabile molecular bromine precursor as a coal additive or adding that substance to the combustion zone of the boiler. See, e.g. Dkt. 103, PFF ¶¶ 419–439; PFF ¶ 907.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs’ stated additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416–418.

210. *The '692 Patent specification makes no reference to practicing the claimed invention by adding the thermolabile molecular bromine precursor to the coal, or to injecting it into the combustion zone.*

D.I. # 76, Second Wilcox Report ¶ 64; D.I. # 35-1, '692 Patent.

Pl. Response: Disputed. Defendants’ proposed finding of fact is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). The evidence makes clear that the ’692 Patent discloses at least three general categories of methods for injecting additives into coal combustion flue gas including, among other things, adding additives to coal, and injecting coal treated with an additives into the combustion zone. *See, e.g.* Dkt. 103, PFF ¶¶ 419–439; PFF 907. At a minimum, there is evidence that injecting into the combustion zone is injecting into flue gas. *See, e.g.,* Dkt. 73, Fry Second Report, ¶¶ 97, 98, 99, 102, 140. As such, to the extent this proposed fact is comprehensible, it appears to state a claim construction argument rather than a fact, and is disputed by the opinion of Dr. Fry. *See also* Plaintiffs’ Brief in Opposition to Defendants’ Motion for Summary Judgment at Section II (D).

The ’692 Patent explains that the inventive process “can be adjusted in numerous advantageous ways, e.g., by varying (i) droplet size during injection into flue gas, (ii) concentration of thermolabile species, and (iii) dosing level, etc.” Dr. Fry has explained that “it primarily is the case that factors such as concentration and dosing levels are varied when a different injection site is being considered [for example, injecting into the combustion zone flue gas with the coal directly versus directly injecting the additive itself in the upper furnace.]” Dkt. 103, ¶¶ 416-417.

Indeed, the intrinsic evidence proves that a POSA at the time would have understood the phrase “injecting into flue gas” to encompass all three methods of introducing an additive into coal combustion flue gas, as shown, for example, by Madden. Dkt. 103, PFF ¶ 247, U.S. Patent No. 6,372,187 (“Madden”). Dkt. 74, Fry Reply Report, ¶¶ 53, 63.

The inventor of the Chem-Mod Process, Mr. Comrie, agreed that injecting in with the coal, or injecting alone into the combustor, or injecting further downstream, all were equivalent ways to introduce additives to flue gas, and that one only might need to change the dosing level depending upon which approach used. Dkt. 103, ¶ 418.

Def. Reply: Undisputed. Def. PFF ¶ 210 is not inconsistent with the record as evidenced by comparing Def. PFF ¶ 210 to the ’692 Patent. Further, Plaintiffs have not identified any teaching in the ’692 Patent regarding application of thermolabile molecular bromine precursors to coal. Plaintiffs’ expert witness, Andrew Fry, agrees that the ’692 Patent does not explicitly discuss the addition of a thermolabile molecular bromine precursor to coal before combustion, or the addition into the combustion zone along with coal. D.I. # 71, Fry Dep. 174:8–19. Further, Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs’ stated additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416–418.

211. *The specification of the ’692 Patent also cites, and discusses the teachings of U.S. Patent No. 4,729,882 to Ide.*

D.I. # 35-1, ’692 Patent at 1:29–49.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

212. *Ide* discloses addition of an acidic gas such as HCl gas to oxidize Hg in an incinerator emission stream.

Mark Decl. Ex. 158, U.S. Patent No. 4,729,882 at 4:4–6 (“ ‘882 Patent”).

Pl. Response: Disputed. Defendants have mischaracterized the referenced evidence. *Ide* is directed to a process of removing mercury from gaseous emissions from municipal waste incineration. *Ide* is discussed in the “Background” section of the ’692 Patent as being a method for mercury removal that the inventor described as not being suitable for coal-fired power plants. *Ide* describes its method of reducing mercury from municipal incinerator wastes as involving either supplying a chloride-containing gas into the incinerator, or adding a chlorine-containing material into the incinerator. *Ide*’s mercury remove technique is described as requiring massive hydrogen chloride injection into mercury containing flue gas.

Dkt. 103, PFF ¶¶ 427–431. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (D)(5)(c).

Def. Reply: Undisputed. Def. PFF ¶ 212 does not mischaracterize the ‘882 Patent. Plaintiffs’ cited evidence is consistent with the stated fact, and Plaintiffs offer no evidence to dispute that the ‘882 Patent discloses addition of an acidic gas such as HCl gas to oxidize Hg in an incinerator emission stream.

213. *Ide*, which issued in 1988, discloses three distinct ways to introduce chlorine into the system in order to treat emissions gases: injecting a treatment gas such as HCl into the emissions gases (cf. “injecting . . . into the flue gas”); adding a substance to the material to be incinerated (cf. applying an additive such as calcium oxide to the coal); and burning material that already contains the desired additive.

Mark Decl. Ex. 158, ‘882 Patent at 4:4–16; D.I. # 76, Second Wilcox Report ¶ 66.

Pl. Response: Disputed. Defendants’ proposed finding of fact is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). Defendants have mischaracterized the evidence being relied for their proposed finding of fact. Dr. Fry has opined that the “’692 Patent refers to various references that would make clear to a POSA that there were at least three ways that an additive could be “‘injected . . . into the flue gas,” including the methods disclosed in the ‘882 Patent.” In fact, the inclusion of *Ide* into the ’692 Patent further illustrates that the ’692 Patent did disclose all three known ways of injecting additives into flue gas, even though at the time, the inventor preferred the third of the three, the injection into the flue gas when it was downstream. Dkt. 103, PFF ¶¶ 427-431; Dkt. 74, Third Fry Report, ¶ 63. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (D)(5)(c).

At a minimum, there is evidence that injecting into the combustion zone is injecting into flue gas. *See, e.g.*, Dkt. 73, Fry Second Report, ¶¶ 97, 98, 99, 102. As such, to the extent this proposed fact is comprehensible, it appears to state a claim construction argument rather than a fact, and is disputed by the opinion of Dr. Fry. *See also* Plaintiffs' Brief in Opposition to Defendants' Motion for Summary Judgment at Section II (D).

The '692 Patent explains that the inventive process "can be adjusted in numerous advantageous ways, e.g., by varying (i) droplet size during injection into flue gas, (ii) concentration of thermolabile species, and (iii) dosing level, etc." Dr. Fry has explained that "it primarily is the case that factors such as concentration and dosing levels are varied when a different injection site is being considered [for example, injecting into the combustion zone flue gas with the coal directly versus directly injecting the additive itself in the upper furnace.]" Dkt. 103, ¶¶ 416-417.

Indeed, the intrinsic evidence proves that a POSA at the time would have understood the phrase "injecting into flue gas" to encompass all three methods of introducing an additive into coal combustion flue gas, as shown, for example, by Madden. Dkt. 103, PFF ¶ 247, U.S. Patent No. 6,372,187 ("Madden"). Dkt. 74, Fry Reply Report, ¶¶ 53, 63.

The inventor of the Chem-Mod Process, Mr. Comrie, agreed that injecting in with the coal, or injecting alone into the combustor, or injecting further downstream, all were equivalent ways to introduce additives to flue gas, and that one only might need to change the dosing level depending upon which approach used. Dkt. 103, ¶ 418.

Def. Reply: Undisputed. Def. PFF ¶ 213 is not inconsistent with the record as evidenced by comparing Def. PFF ¶ 213 to the '882 Patent. Further, Plaintiffs' statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs' stated additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416-418.

214. *Plaintiffs' expert witness, Andrew Fry, acknowledged that the '882 patent to Ide "teaches inclusion of chlorinated materials with the flue, inject – injection of those material[s] in the combustion zone and injection later."*

D.I. # 71, Fry Dep. 99:18-101:7.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

215. *The '692 Patent, in describing the '882 Patent, characterizes only the addition of HCl gas to the emissions stream as "injection."*

D.I. # 35-1, '692 Patent at 1:29-38.

Pl. Response: Disputed. Defendants' proposed finding of fact is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) ("Arguments have no place in proposed findings of

fact or responses to such findings.”). As phrased, the proposed finding of fact does not reflect a fact but rather a legal conclusion. Plaintiffs dispute Defendants’ proposed fact mischaracterizing the reference. The ’692 Patent states the following with respect to the Ide patent:

Ide et al describe the conversion of mercury into mercuric chloride via addition of acidic chlorine containing material, especially hydrogen chloride, into mercury-containing gaseous emissions (see Ide, Akiro et al. 1988. “Process for Cleaning Mercury-Containing Gaseous Emissions. U.S. Pat. No. 4,729,882). This mercury removal technique requires massive hydrogen chloride injection into mercury containing flue gas, at HCl levels of 500 to 1500 ppm, which would result in excessive corrosion of coal fired power plant Steel components. Furthermore, combination of this technique with Subsequent hydrogen chloride/mercuric chloride containing flue gas in a wet flue gas desulphurization System (FGD) containing alkali for purposes of Sulphur dioxide adsorption from flue gas as a Sulphite, bisulphate, bisulphate, or Sulphate would result in unacceptable consumption of alkali Scrubbing chemicals by the adsorbed hydrogen chloride. Therefore, this technique for mercury control is not believed to be commercially viable in coal fired power plants.

Dkt. 35-1, ’692 Patent at 1:29–48. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (D)(5)(c).

Def. Reply: Undisputed. Def. PFF ¶ 213 is not inconsistent with the record as evidenced by comparing Def. PFF ¶ 215 to the ’692 Patent. Further, Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Moreover, the cited evidence does not support Plaintiffs’ stated additional facts and relies upon inadmissible evidence. D.I. # 134, Def. Resp. to Pl. PFF ¶¶ 416–418.

216. *The specification of the ’692 Patent also cites, and discussed, the teaching of U.S. Patent No. 5,435,980 to Felsvang.*

D.I. #35-1, ’692 Patent at 1:49–63.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

217. *Felsvang U.S. Patent No. 5,435,980 issued in 1995 and explicitly discloses applying halide compounds to coal before combustion, adding a halide compound during combustion, and injecting such a compound into the flue gas, as a way of improving mercury-reduction systems.*

D.I. # 76, Second Wilcox Report ¶ 67; D.I. # 74, Third Fry Report ¶ 64; D.I. # 71 Fry Dep. 101:16–103:15; Mark Decl. Ex. 140, U.S. Patent No. 5,435,980.

Pl. Response: Disputed. Defendants’ proposed finding of fact is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). Defendants have mischaracterized the

evidence being relied for their proposed finding of fact. Felsvang discloses introducing additives to increase the chloride content of flue gas. Dkt. 103, PFF ¶ 432; *see also* Dkt. 180, PFF ¶¶ 433–439. *See also* Dkt. 102 at 75 & 76.

Def. Reply: Undisputed. Def. PFF ¶ 217 does not mischaracterize the cited evidence; the text of the Felsvang patent supports the stated fact that Felsvang discloses adding halide compounds to coal before or during combustion, or injecting it into the flue gas, to improve mercury reduction systems. D.I. # 90, Mark Decl. Ex. 140, ‘980 Patent, at 1:7-11.

C. Field of the ‘692 Patent; POSA

218. *The general field of the ‘692 Patent is the removal of mercury from the emissions of coal-burning plants.*

D.I. # 75, First Wilcox Report ¶ 96.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact as Defendants have mischaracterized the ‘692 Patent. It is Plaintiffs’ position that the ‘692 Patent is directed to a method of treating coal combustion flue gas containing mercury, where the method includes injecting a bromide compound that is a thermolabile molecular bromine precursor into the flue gas, where the injection of this compound under the conditions of the combustion system will effect oxidation of elemental mercury to mercuric bromide. The method also includes providing alkaline solid particles in the flue gas ahead of a particulate collection device in order to adsorb at least a portion of the mercuric bromide that is formed. Dkt. 73, Rebuttal Expert Report of Dr. Andrew Fry Regarding Validity, ¶ 153.

Def. Reply: Undisputed. Def. PFF ¶ 218 does not mischaracterize the ‘692 Patent, as is evident by comparing Def. PFF ¶ 218 to the text of the ‘692 Patent. D.I. # 35-1, ‘692 Patent at 1:7–8 (field of invention).

219. *A POSA would have at least a Master’s degree in chemistry, chemical engineering, or materials science from an accredited science or engineering program and at least four years of relevant experience in the treatment of mercury or a similar pollutant from combustion exhaust.*

D.I. # 75, First Wilcox Report ¶ 97.

Pl. Response: Disputed. This proposed finding of fact is disputed as set forth in Dr. Fry’s First Expert Report, which states that a POSA would be a person who has at least a Bachelor’s degree in chemical or mechanical engineering, chemistry, or a similar degree, as well as having at least a few years’ experience developing or studying technologies for reducing emissions in coal-fired power plants or a few years’ experience working with or managing the combustion process of a coal-fired power plant. Dkt. 72 at ¶ 134.

Def. Reply: Undisputed that a POSA would possess at least a Bachelor’s degree in chemical or mechanical engineering. The parties disagree about the precise level of expertise required for a POSA. The disagreement is

immaterial to the resolution of claim construction as Defendants' claim construction would be adopted under either definition.

220. *During the reexamination, Hazelmere explained: "a POS[er] with respect to the ['692 Patent] . . . is well educated and experienced in the art."*

D.I. # 35-9, Respondent Hazelmere's Brief (Dec. 20, 2012), at 407, n. 2.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

221. *A POSA would have working knowledge of the key components of flue gas treatment systems.*

D.I. # 75, First Wilcox Report ¶ 97.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

222. *A POSA would understand the technology "of the current invention" to be the addition of the "thermolabile molecular bromine precursor" into the flue gas.*

D.I. # 76, Second Wilcox Report ¶ 64.

Pl. Response: Disputed. This proposed finding of fact is disputed as it does not accurately describe the technology of the current invention. It is Plaintiffs' position that the '692 Patent is directed to a method of treating coal combustion flue gas containing mercury, where the method includes injecting a bromide compound that is a thermolabile molecular bromine precursor into the flue gas, where the injection of this compound under the conditions of the combustion system will effect oxidation of elemental mercury to mercuric bromide. The method also includes providing alkaline solid particles in the flue gas ahead of a particulate collection device in order to adsorb at least a portion of the mercuric bromide that is formed. Dkt. 73, Rebuttal Expert Report of Dr. Andrew Fry Regarding Validity, ¶ 153.

Def. Reply: Undisputed that a POSA would understand the technology of the current invention to include the addition of the "thermolabile molecular bromine precursor" into the flue gas.

D. Prosecution of the '692 Patent

223. *Oehr filed U.S. Patent Application No. 10-073986 on February 14, 2002 (the "'692 Patent Application").*

D.I. # 35-6, Utility Patent Application No. 10/073986 (Feb. 14, 2002), at 209–234.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

224. *On June 1 and 4, 2004, Oehr submitted a final set of amendments with a Request for Continued Examination.*

D.I. # 35-6, Preliminary Amendment and Request for Continued Examination (June 2003), at.45–56

Pl. Response: Undisputed.

Def. Reply: Undisputed.

225. *In the June 2004 amendments, the sole independent claim stated:*

A method of treating coal combustion flue gas containing mercury, comprising: injecting a member selected from the group consisting of molecular halogen and a thermolabile molecular halogen precursor into said flue gas to effect oxidation of elemental mercury to a mercuric halide and providing alkaline solid particles in said flue gas ahead of a particulate collection device, in order to adsorb at least a portion of said mercuric halide.

D.I. # 35-6, Preliminary Amendment (June 2003), at 46.

Pl. Response: Disputed. Plaintiffs dispute Defendants' characterization of this document as the "June 2004 Amendments" and the referenced claim as the "sole independent claim." Dkt. 35-6 at 46-49, claims 1 and 19.

Def. Reply: Undisputed. Plaintiffs have not offered any alternative characterization of the "June 2004 Amendments" or the "sole independent claim." Further, Def. PFF ¶ 225 is supported by the cited evidence. The June 2004 Amendments at D.I. # 35-6 bear a date of June 2004. With regard to the "sole independent claim," although Plaintiffs reference two independent claims at pages 46–49 of the Preliminary Amendment, the language of both claims is identical.

E. Reexamination of the '692 Patent

226. *On July 17, 2010, the Patent Office granted Alstom Power, Inc.'s request for inter partes reexamination of the '692 Patent.*

D.I. # 35-7, Order Granting/Denying Request for Inter Partes Reexamination (July 17, 2010), at 195.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

227. *Upon reexamination, the Patent Office examiner initially found all the claims of the '692 Patent to be unpatentable because they were obvious in light of multiple combinations of prior art, none of which had been referenced during the prosecution.*

D.I. # 35-7, Office Action in Inter Partes Reexamination (July 17, 2010), at 214–244.

Pl. Response: Disputed. As phrased, this proposed fact suggests that the claims “were obvious,” which is a legal conclusion. The proposed fact is also an over simplification of the rejections made by the Patent Office in the particular office action cited. The ultimate conclusions of the Patent Office are reflected in the Reexamination Certificate and not simply in one office action.

Def. Reply: Undisputed. Def. PFF ¶ 227 is not inconsistent with the record, as is evident by comparing Def. PFF ¶ 227 to the Office Action in Inter Partes Reexamination. Plaintiffs have not cited evidence that disputes the stated fact. Finally, Def. PFF ¶ 227 refers to the Office Action in the Inter Partes Reexamination; Plaintiffs’ reference to the Reexamination Certificate is irrelevant.

228. *None of the prior art referred to by the Patent Officer had been referenced during the prosecution.*

D.I. # 35-7, Office Action in Inter Partes Reexamination (July 17, 2010), at 214–244.

Pl. Response: Disputed. This proposed fact lacks antecedent basis and explanation and as phrased is vague and ambiguous in its use of the phrase “none of the art referred to by the Patent Officer.” It is unclear what art is referred to in this language and therefore Plaintiffs dispute this proposed finding of fact on that basis.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact.

229. *On April 2, 2012 Oehr submitted a final set of amendments that substantially replaced all instances of “halogen” compounds with either “bromide” compounds or “hypochlorite” compounds in solution with calcium chloride.*

D.I. # 35-9, (109–130), Patent Owner’s Response to Action Closing Prosecution Dated February 10, 2012 (Apr. 2, 2012) (“April 2012 Amendment”), at 110–114, 124–130.

Pl. Response: Disputed. This proposed finding of fact is vague and ambiguous in its use of the phrase “substantially replaced” and “all instances of ‘halogen compounds.’” As such, it is incomprehensible and Plaintiffs dispute it for that reason.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact.

F. Arguments of the Third-Party Requester (Alstom)

230. *Alstom argued that there was a lack of enablement because the specification did not disclose any working examples of a thermolabile molecular bromine precursor.*

D.I. # 35-9, Third Party Requester's Appellant Brief (Nov. 21, 2012) ("Alstom's Brief"), at 282.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

231. *Alstom referred to Yang to argue that CaBr₂ did not necessarily produce Br₂ and thus that CaBr₂ was unpredictable as a thermolabile molecular bromine precursor.*

D.I. # 35-9, Alstom's Brief (Nov. 21, 2012), at 279 ("As such, and contrary to the examiner's statement, calcium bromide is not a thermolabile molecular bromine precursor. Nor is the claimed invention predictable.").

Pl. Response: Disputed. This proposed finding of fact is an argumentative description and mischaracterization of what was argued rather than an accurate summary of the argument presented during the reexamination. The cited page of the reexamination proceeding does not discuss whether CaBr₂ "necessarily" produces Br₂ or not in general, as the proposed finding of fact suggests, but rather indicates that Yang did not support formation of Br₂ at certain temperatures. It states: "In fact, a 2009 article shows that calcium bromide does not decompose to form molecular bromine unless it is heated to temperatures of 752°C (1025K) and above, Tang at 7586, which is well above the temperature range disclosed in the specification." Dkt. 35-9, Alstom's Brief (Nov. 21, 2012), at 279.

Def. Reply: Undisputed. Def. PFF ¶ 231 does not mischaracterize the evidence; rather, it is an accurate summary of Alstom's brief. There is no material difference between Alstom's statement that Yang did not support formation of Br₂ at certain temperatures and the stated fact that Alstom stated Yang did not necessarily produce Br₂.

232. *Alstom also argued:*

Given the breadth of the claims, the complete lack of direction provided in the specification for determining whether a bromide compound (or a bromide compound selected from the group consisting of magnesium compounds and calcium compounds) is a thermolabile molecular bromine precursor, the unpredictability of the claimed invention, and the lack of any working examples, one of ordinary skill in the art could not make or use the invention based on the '692 specification without undue experimentation. As such, claims 1, 8-19, and 26-33 are invalid for failing to satisfy the enablement requirement of 35 U.S.C. § 112, 1.

D.I. # 35-9, Alstom's Brief (Nov. 21, 2012), at 283.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

233. *During the reexamination, Alstom argued that the “flue gas” described in the patent only included gas up to temperatures of 527 °C (981 °F), which is the highest temperature listed in Table 2 in the patent.*

D.I. # 35-9, Alstom’s Brief (Nov. 21, 2012), at 268.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

G. Arguments of the Patent Owner (Hazelmere)

234. *During the reexamination, Hazelmere took the position that the broadest reasonable interpretation of the term “flue gas” as used in the claims of the ’692 Patent should be the combustion gases “from the upper furnace region through the emission control devices.”*

D.I. # 35-9, Respondent Hazelmere’s Brief (Dec. 20, 2012), at 408.

Pl. Response: Disputed. This proposed finding of fact is an argumentative description and mischaracterization of what was argued rather than an accurate summary of the arguments presented during the reexamination. It is disputed and contradicted by the evidence. The evidence shows patent owner’s “position” was not that flue gas should be limited to the upper furnace region through the emission control devices. Dkt. 103, PFF ¶¶ 243, 253. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C)(4)(b).

Def. Reply: Undisputed. Def. PFF ¶ 234 does not mischaracterize the cited evidence; rather, it is an accurate summary of Respondent’s brief. Further, Plaintiffs have not cited evidence to support their response. For example, Pl. PFF ¶¶ 243 and 253 explicitly quote Hazelmere’s brief, which states, “[t]o persons of ordinary skill in the art, ‘flue gas’ means that region of combustion gases from the upper furnace region through the emission control devices.” D.I. # 103, Pl. PFF ¶ 253.

235. *During the reexamination, Hazelmere took the following position with respect to the definition of flue gas:*

To persons of ordinary skill in the art, ‘flue gas’ means that region of combustion gases from the upper furnace region through the emission control devices.

D.I. # 35-9, Respondent Hazelmere’s Brief (Dec. 20, 2012), at 408.

Pl. Response: Disputed. This proposed finding of fact is an argumentative description and mischaracterization of what was argued rather than an accurate summary of the argument presented during the reexamination. The cited language does not reflect Hazelmere’s overall “position” with respect to the “definition” of flue gas. It is simply one statement, taken out of context in the proposed finding of fact, and the record reflects evidence that contradicts this proposed finding of fact as to Hazelmere’s “position.” Dkt. 103, PFF ¶¶ 243, 253.

See also Plaintiffs' Opposition to Defendants' Motion for Summary Judgment, Section II (C)(4)(b).

Def. Reply: Undisputed. Def. PFF ¶ 235 does not mischaracterize the cited evidence; rather, it is an accurate summary of Respondent's brief. Further, Plaintiffs have not cited evidence to support their response. For example, Pl. PFF ¶¶ 243 and 253 explicitly quote Hazelmere's brief, which states, "[t]o persons of ordinary skill in the art, 'flue gas' means that region of combustion gases from the upper furnace region through the emission control devices." D.I. # 103, Pl. PFF ¶ 253.

236. *During the reexamination, Hazelmere took the position that "[t]he terms 'flue gas' and 'thermolabile' are entitled to the full breadth of their respective definitions as understood by persons of ordinary skill in the art."*

D.I. # 35-9, Respondent Hazelmere's Brief (Dec. 20, 2012), at 407.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

237. *Even under the broadest meaning of the term "flue gas," the patent owner itself placed "flue gas" no further upstream than the "upper furnace region."*

D.I. # 76, Second Wilcox Report ¶ 27.

Pl. Response: Disputed. This proposed finding of fact is an argumentative description and mischaracterization of what was argued rather than an accurate summary of the arguments presented during the reexamination. It is disputed and contradicted by the evidence. The evidence shows patent owner's position was that flue gas should not have an upstream limit of the upper furnace region. Dkt. 103, PFF ¶¶ 243, 253. *See also* Plaintiffs' Opposition to Defendants' Motion for Summary Judgment, Section II (C)(4)(b).

Def. Reply: Undisputed. Def. PFF ¶ 237 does not mischaracterize Hazelmere's argument during the reexamination. Further, the evidence cited by Defendants—the Second Wilcox Report at ¶ 27—accurately represents the contents of Hazelmere's brief, which states, "[t]o persons of ordinary skill in the art, 'flue gas' means that region of combustion gases from the upper furnace region through the emission control devices." D.I. # 103, Pl. PFF ¶ 253.

238. *The "upper furnace region" is downstream of (i.e., after) the combustion zone (i.e., the lower part of the boiler).*

D.I. # 76, Second Wilcox Report ¶ 27.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

239. *During the reexamination, Hazelmer took the position that “the prior art is quite clear and consistent in its teachings that ‘flue gas’ refers to combustion gases which reside in the ‘flue’ - the region of a coal combustor from above the combustion zone through the particulate collection system.”*

D.I. # 35-9, Respondent Hazelmer’s Brief (Dec. 20, 2012), at 408 (citing Madden (U.S. Patent No. 6,372,187) and Knowles (U.S. Patent No. 5,787,823)).

Pl. Response: Disputed. The proposed finding of fact mischaracterizes Hazelmer’s “position” as to what the prior art showed. The quotation cannot be understood without reference to the overall context, which is not provided in this proposed finding of fact. The “position” of the patent owner during the reexamination cannot be summarized with reference to one quotation. This proposed finding of fact is disputed by other statements made by the patent owner in the same filing. For example, the patent owner stated: “Madden (U.S. Patent 6,372,187 to Madden; “Madden”), for example does not define “flue gas” to be “the upper furnace cavity” as [Alstom] alleges, but quite clearly refers to a portion of the “flue gas” that resides in the upper furnace cavity.” Dkt. 103, PFF ¶ 253 (emphasis added). *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C)(4)(b).

Def. Reply: Undisputed. Def. PFF ¶ 239 does not mischaracterize the cited evidence; rather, it is an accurate summary of Respondent’s brief. Further, Plaintiffs have not cited evidence to support their response. For example, Pl. PFF ¶¶ 243 and 253 explicitly quote Hazelmer’s brief, which states, “[t]o persons of ordinary skill in the art, ‘flue gas’ means that region of combustion gases from the upper furnace region through the emission control devices.” D.I. # 103, Pl. PFF ¶ 253.

240. *Plaintiffs’ proposal to extend “flue gas” to include gas within the combustion zone of the boiler is inconsistent with the clear statements by Hazelmer during the reexamination that “flue gas” refers to gas “from above the combustion zone.”*

D.I. # 76, Second Wilcox Report ¶ 28; D.I. # 35-9, Respondent Hazelmer’s Brief (Dec. 20, 2012), at 408.

Pl. Response: Disputed. This proposed finding of fact is not a fact, but rather argument. During the reexamination, Hazelmer did not limit “flue gas” to gases “from above the combustion zone.” *See* Dkt. 103, PFF ¶¶ 243, 253. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C)(4)(b).

Def. Reply: Undisputed. Plaintiffs have not cited evidence to support their response. For example, Plaintiffs’ cited evidence explicitly quotes Hazelmer’s brief, which states “‘flue gas’ refers to combustion gases which reside in the ‘flue’—the region of a coal combustor from above the combustion zone through the particulate collection system.” D.I. # 103, Pl. PFF ¶ 253.

241. *During the reexamination, Hazelmere's position was that "flue gas" should not be defined in terms of temperature.*

D.I. # 35-9, Respondent Hazelmere's Brief (Dec. 20, 2012), at 408.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

242. *During the reexamination, Hazelmere took the position that "thermolabile" is "an adjective describing a compound or combination of compounds that form molecular halogen at flue gas temperatures typical of coal-fired power plants with no set limitation on the temperature at which such halogens are formed."*

D.I. # 35-9, Respondent Hazelmere's Brief (Dec. 20, 2012), at 408.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

243. *During the reexamination, Hazelmere's took the position that "calcium bromide is a thermolabile molecular halogen precursor" at certain temperatures.*

D.I. # 35-9, Respondent Hazelmere's Brief (Dec. 20, 2012), at 414.

Pl. Response: Disputed. This proposed fact mischaracterizes the "position" of the Hazelmere. The proposed filing of fact is phrased so broadly as to be incorrect. Hazelmere did not take the position that calcium bromide is a "thermolabile molecular bromine precursor" at certain temperatures under all conditions, as the proposed finding of fact suggests. On the contrary, the record shows that Hazelmere's statement, when considered in context, is referring specifically to the set of conditions present in a coal-fired power plant. PFF ¶¶ 1155-1165, 1165-1170. *See also* Plaintiffs' Opposition to Defendants' Motion for Summary Judgment, Section V (B).

Def. Reply: Undisputed that during the reexamination, Hazelmere took the position that "calcium bromide is a thermolabile molecular halogen precursor" at certain temperatures with regard to coal-fired power plants.

244. *During the reexamination, Hazelmere took the position that:*

Unlike in Lizard Tech, in which the specification did not describe the breadth of the subject matter claimed, the Specification quite clearly teaches injecting magnesium and calcium bromides into a flue gas after the superheater and, for example, at the economizer inlet, where the bromide compounds will affect oxidation of mercury to mercuric bromide. This scope of teaching in the Specification matches exactly the scope of subject matter claimed. The law does not require such an exacting match between specification and claims, but that match exists in the ['692 Patent].

D.I. # 35-9, Respondent Hazelmere's Brief (Dec. 20, 2012), at 413.

Pl. Response: Disputed. This proposed fact mischaracterizes the “position” of Hazelmere. The proposed finding of fact does not provide the context in which the statement was made, and therefore the cited language cannot be considered to be the general “position” of Hazelmere. This statement was made in the context of discussing the breadth of the claims with regard to the “thermolabile molecular bromine precursor,” not with regard to the scope of the claims with respect to other claim terms or the scope of the claims as a whole. PFF. ¶ 1166-1167. The overly broad phrasing of this PFF is misleading and Plaintiffs’ object to it on that basis. It is also disputed by other evidence concerning the breadth of other claim elements, such as the location of injecting into flue gas. Dkt. 103, PFF ¶¶ 243, 253. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section IV (D)(6)(a).

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and the cited materials do not contradict the stated fact.

245. *During the reexamination, Alstom alleged that the ’692 Patent was invalid under 35 U.S.C. Section 112 because of a lack of written description and enablement with regard to the term thermolabile molecular bromine precursor.*

D.I. # 35-9, Alstom’s Brief (Nov. 21, 2012), at 265–266, 275–283 (“The specification provides absolutely no blaze marks that would direct one skilled in the art to select the sub-genus bromide compounds that are thermolabile molecular bromine precursors now claimed.”).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

246. *During the reexamination, Alstom argued that the ’692 Patent did not provide written description of a thermolabile molecular bromine precursor because the inventor did not demonstrate that he had possession of any thermolabile molecular bromine precursors that contained calcium, and there were claims directed to the use of calcium compounds.*

D.I. # 35-9, Alstom’s Brief (Nov. 21, 2012), at 281.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

247. *During the reexamination, in response to Alstom’s arguments, Hazelmere stated that a POSA reading the ’692 Patent would identify two specific compounds as thermolabile molecular bromine precursors: MgBr₂ and CaBr₂, and that the POSA would know that the resulting molecular bromine would oxidize elemental mercury to mercuric bromide:*

“Considering the [’692 Patent] in its entirety and relying on the art of record to demonstrate what a person of ordinary skill in the art . . . would know, Oehr teaches that thermolabile molecular halogen precursors . . . , including magnesium bromide and calcium bromide, thermolabile molecular bromine precursors . . . , can be added, for example, after the

*superheater section of a coal combustor, where a POSITA would know the temperature range from about 649 °C to about 1232 °C and **that at such temperatures both magnesium bromide and calcium bromide will decompose to form HBr which in turn will form Br₂ which in turn will oxidize elemental mercury to HgBr₂.***

D.I. # 35-9, Respondent Hazelmere's Brief (Dec. 20, 2012), at 407 (emphasis added).

Pl. Response: Disputed. Plaintiffs do not dispute that the quoted language appears in the patent owner's appeal brief, but dispute the proposed PFF as phrased because it is a vague overgeneralization of what Hazelmere "stated." The proposed finding of fact could be read to suggest that Hazelmere "stated" that a POSA would identify *only* two thermolabile molecular bromine precursors, or that use of the two compounds mentioned could result in formation of molecular bromine under all conditions including those not found in a coal combustion power plant. These two mischaracterizations are disputed by the language of the quote itself.

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact.

248. *During the reexamination, Hazelmere responded to the Alstom's allegation that "the Claims lack support and were unpredictable" by citing to the Examiner's previous citation of the Paulik reference:*

"The Examiner correctly found that based on Paulik it was known in the art that calcium bromide is a thermolabile molecular halogen precursor at temperatures between 500 °C and 1000 °C. RAN at 15. Paulik furthermore demonstrated the impact of oxygen on the thermolability of calcium bromide."

D.I. # 35-9, Respondent Hazelmere's Brief (Dec. 20, 2012), at 414; Mark Decl. Ex. 156, F. Paulik et. al., Examination of the Decomposition of CaBr₂ With the Method of Simlutaneous TG, DTG, DTA and EGA, 15 JOURNAL OF THERMAL ANALYSIS 271 (1978).

Pl. Response: Disputed. Plaintiffs do not dispute that the quoted language appears in the patent owner's brief, but dispute the characterization contained in the proposed finding of fact. The proposed finding of fact is vague and misleading to the extent that it suggests that the patent owner relied only on the Paulik reference.

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact.

249. *Calcium bromide will decompose in the presence of oxygen between 500 and 1000°C to form CaO and Br₂.*

Mark Decl. Ex. 156, F. Paulik et. al., Examination of the Decomposition of CaBr₂ With the Method of Simlutaneous TG, DTG, DTA and EGA, 15 JOURNAL OF THERMAL ANALYSIS 271, 271 (1978).

Pl. Response: Disputed. As phrased, the proposed fact is a broad, general statement that is not true under all conditions. The Paulik reference indicates information about the behavior of calcium bromide only under the conditions reported in Paulik. It indicates that calcium bromide can decompose in the presence of oxygen at certain temperatures but does not indicate that it will do so under all conditions. As explained by Dr. Fry, depending on various conditions, calcium bromide may or may not result in the generation of molecular bromine, depending on various conditions. Dkt. 73, Fry Second Report, ¶ 200. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section V (B).

Def. Reply: Undisputed. Plaintiffs admit that Def. PFF ¶ 249 is true. The response asserts an additional fact, but it raises no material dispute of the proposed fact.

250. *During the reexamination, Hazelmere later summarized its position in the heading for the enablement section of its appeal brief:*

“Claims 1, 8-19 and 26-33 are enabled because magnesium bromide and calcium bromide are thermolabile molecular bromine precursors at the temperatures taught in the Specification.”

D.I. # 35-9, Respondent Hazelmere’s Brief (Dec. 20, 2012), at 415.

Pl. Response: Disputed. This proposed finding of fact is a mischaracterization of the position taken by Hazelmere during the reexamination. A “heading” in a legal brief cannot be assumed to “summarize” a “position.” The proposed finding of fact is too broad to be accurate. In the section below the heading, the patent owner pointed out, in the section under this heading, that “[t]he Specification teaches that a TMBP may be injected into a flue gas at temperatures of from about 649 to about 1232°C.” Plaintiffs’ PFF ¶ 1169. This statement references the specification’s teaching of injecting a thermolabile molecular bromine precursor into the preferred location (after the superheater section) in a coal-fired power plant. To the extent the proposed finding of fact suggests a more general position was taken by the patent owner, this is disputed by the language in the section to which the section heading applied. PFF ¶ 1169.

Def. Reply: Undisputed. Def. PFF ¶ 250 does not mischaracterize the cited evidence; rather, it is an accurate summary of Respondent’s brief. Further, Plaintiffs have not cited evidence to support their response.

251. *During the reexamination, in support of its position that the specification provides adequate written description, Hazelmere stated:*

“[T]he Specification quite clearly teaches injecting magnesium and calcium bromides into a flue gas after the superheater and, for example, at the economizer inlet, where the bromide compounds will affect oxidation of mercury to mercuric bromide.”

D.I. # 35-9, Respondent Hazelmere’s Brief (Dec. 20, 2012), at 413.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

252. *During the reexamination, Hazeltimer explained that “[t]he Specification teaches that magnesium bromide is a thermolabile molecular halogen precursor above and below 527°C.”*

D.I. # 35-9, Respondent Hazeltimer’s Brief (Dec. 20, 2012), at 410.

Pl. Response: Disputed. Plaintiffs do not dispute that the quoted language appears in Hazeltimer’s Brief, but dispute the proposed finding of fact as phrased because it is an argumentative description and mischaracterization of what Hazeltimer argued during the reexamination, which is taken out of context, and is misleading as phrased. To the extent the proposed finding of fact suggests that Hazeltimer intended the statement to refer to anything outside of the embodiment discussed in the ’692 Patent, it is disputed and contradicted by the evidence. The evidence shows that the statements made by Hazeltimer regarding the patent’s support for the “thermolabile molecular bromine precursor” refer to the phrase as it is used in the patent, in the context of the application described in the patent, i.e., in a coal-fired power plant. PFF ¶¶ 1165-1170. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (D)(6).

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the cited materials do not contradict the stated fact.

253. *During the reexamination, Hazeltimer argued that a POSA would know that at flue gas temperatures that “both magnesium bromide and calcium bromide will decompose to form HBr which in turn will form Br₂ which in turn will oxidize elemental mercury to HgBr₂.”*

D.I. # 35-9, Respondent Hazeltimer’s Brief (Dec. 20, 2012), at 407.

Disputed in part. Plaintiffs do not dispute that the quoted language appears in Hazeltimer’s Brief, but dispute the proposed finding of fact as phrased because it is an argumentative description and mischaracterization of what Hazeltimer argued during the reexamination, which is taken out of context, and is misleading as phrased. To the extent the proposed finding of fact suggests that Hazeltimer intended the statement to refer to anything outside of the embodiment discussed in the ’692 Patent, it is disputed and contradicted by the evidence. The evidence shows that the statements made by Hazeltimer regarding the patent’s support for the “thermolabile molecular bromine precursor” refer to the phrase as it is used in the patent, in the context of the application described in the patent, i.e., in a coal-fired power plant. Plaintiffs’ PFF ¶¶ 1165-1170.

Def. Reply: Undisputed. Def. PFF ¶ 253 does not mischaracterize the cited evidence; rather, it is an accurate summary of Respondent’s brief. Further, Plaintiffs have not cited evidence to support their response.

254. *During the reexamination, Hazeltimer also pointed out that the Yang study was performed in the absence of oxygen, and concluding that the Examiner thus “correctly found that based on Paulik it was known in the art that calcium*

bromide is a thermolabile molecular halogen precursor at temperatures between 500 °C and 1000 °C.”

D.I. # 35-9, Respondent Hazelmere’s Brief (Dec. 20, 2012), at 414; Mark Decl. Ex. 156, F. Paulik et. al., Examination of the Decomposition of CaBr₂ With the Method of Simultaneous TG, DTG, DTA and EGA, 15 JOURNAL OF THERMAL ANALYSIS 271, 271 (1978).

Disputed in part. Plaintiffs do not dispute that the quoted language appears in Hazelmere’s Brief, but dispute the proposed finding of fact as phrased because it is an argumentative description and mischaracterization of what Hazelmere argued during the reexamination, which is taken out of context, and is misleading as phrased. To the extent the proposed finding of fact suggests that Hazelmere intended the statement to refer to anything outside of the embodiment discussed in the ’692 patent, it is disputed and contradicted by the evidence. The evidence shows that the statements made by Hazelmere regarding the patent’s support for the “thermolabile molecular bromine precursor” refer to the phrase as it is used in the patent, in the context of the application described in the patent, i.e., in a coal-fired power plant. PFF ¶¶ 1165-1170.

Def. Reply: Undisputed. Def. PFF ¶ 254 does not mischaracterize the cited evidence; rather, it is an accurate summary of Respondent’s brief. Further, Plaintiffs have not cited evidence to support their response.

H. PTAB Decision on Appeal From the Reexamination

255. *The Patent and Trademark Appeals Board (“PTAB”) agreed with Hazelmere’s position as to the “broadest reasonable construction” of the term “flue gas.”*

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 368.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document. Dkt. 35-10 (Decision on Appeal, Dec. 12, 2013), at p. 368. The proposed of fact is also vague, ambiguous, and incomprehensible as a standalone finding of fact, without reference to specifically what Defendants’ contend “Hazelmere’s position” is. The Board provided its own reasoning in its Decision on Appeal. Dkt. 35-10, Decision on Appeal (Dec. 12, 2013), generally. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C)(4)(c).

Def. Reply: Undisputed. Def. PFF ¶ 255 does not mischaracterize the cited evidence; rather, it is an accurate summary of Respondent’s brief. Further, Plaintiffs have not cited evidence to support their response.

256. *The PTAB explained that during reexamination, claims are to be given their broadest reasonable interpretation.*

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 368.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

257. *The PTAB accepted an interpretation of “flue gas” that starts in the upper portion of the furnace.*

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 368.

Pl. Response: Disputed. This proposed finding of fact is a mischaracterization of the decision of the PTAB, and is disputed between the parties. The cited evidence itself disputes the proposed finding of fact. The PTAB stated that the preferred location given in the patent specification “is only a preferred location for the treatment to take place, and thus does not limit the claims, which are silent as to either temperature or location of treatment of flue gas.” Dkt. 103, Plaintiffs’ PFF ¶ 215. Furthermore, the PTAB stated that flue gas exists at temperatures higher than the temperature of the upper furnace region of 1260°C. Dkt. 35-10, Decision on Appeal (Dec. 12, 2013), at 368.

Def. Reply: Undisputed. Def. PFF ¶ 257 does not mischaracterize the cited evidence; rather, it is an accurate summary of the Decision on Appeal. The response asserts additional facts regarding the location within the “flue gas” region wherein treatment is “preferred,” according to the ‘692 Patent, but these additional facts do not dispute Defendants’ asserted fact. Further, Plaintiffs have not cited evidence to support their response. *See* Def. PFF ¶ 262.

258. *Relying on the prior art, the PTAB broke down the coal-burning plant into three regions based on each region’s characteristic temperature: (i) the coal input to the boiler [1649 °C (3000 °F)], (ii) the upper portion of the furnace [1260 °C (2300 °F)], and (iii) the outlet of a wet scrubber.*

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 368.

Pl. Response: Disputed. The proposed finding of fact mischaracterizes the decision of the PTAB. The cited reference does not support the proposed finding of fact. For example, the Board did not indicate that a coal-burning plant has “three regions.” On the contrary, the Board’s decision indicates that the evidence showed that there were a wide range of temperatures within a coal fired power plant and the Board did not categorize them as being within “regions,” let alone limited to “three regions.” Dkt. 103, PFF ¶ 266. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C)(4)(c)(ii).

Def. Reply: Undisputed. Def. PFF ¶ 255 does not mischaracterize the cited evidence; rather, it is an accurate summary of Respondent’s brief. Further, Plaintiffs have not cited evidence to support their response. Rather, Plaintiffs’ cited evidence quotes the PTAB decision, which states: “The temperatures for injection of the sorbent range from those typical at the coal input to the boiler (3000°F[1649°C]) and in the upper portion 28 of a furnace (2300°F[1260°C]) to very low temperatures such as at the outlet of a wet scrubber (150°F[66°C].” D.I. # 103, Pl. PFF ¶ 266.

259. *The PTAB stated that the broadest reasonable interpretation for “flue gas” includes an upper temperature “of 1260 °C or higher.”*

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 368.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

260. *An upper temperature of “1260 °C or higher” corresponds to the upper region of the furnace—which the PTAB had just cited as 1260 °C—rather than the coal input to the boiler, which the Board described as 1649 °C.*

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 368; D.I. # 76, Second Wilcox Report ¶ 29.

Pl. Response: Disputed. This proposed finding of fact reflects argument rather than a “fact.” It is contradicted by the evidence. Dkt. 103, Plaintiffs’ PFF ¶¶ 265–266. In the PTAB decision, a reference to 1260°C was a reference to the upper region of the furnace. The reference “or higher” was indicative that flue gas exists upstream of the upper furnace region, inclusive of the combustion zone. *See* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C)(4)(c). Further, even Dr. Wilcox testified that the reference to “1260°C or higher” included temperatures as high as 1370°C, which she elsewhere agreed was temperatures found in the combustion zone. Dkt. 103, ¶¶ 132, 212, 235, 262, 263, 301.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the cited materials do not contradict the stated fact. For example, Pl. PFF ¶¶ 265–266 merely states Fry’s interpretation of language in the PTAB decision. D.I. # 103, Pl. PFF ¶¶ 265–266. Moreover, higher temperatures may exist in parts of the combustion system, including the combustion zone, but that does not put in dispute that the upper temperature of 1260 °C or higher corresponds to the upper region of the furnace.

261. *The PTAB’s decision reflected Hazelmere’s proposal that the flue gas be defined as beginning “from the upper furnace region.”*

D.I. # 35-9, Respondent Hazelmere’s Brief (Dec. 20, 2012), at 407. D.I. # 76, Second Wilcox Report ¶ 29.

Pl. Response: Disputed. This proposed finding of fact reflects argument rather than a “fact.” The cited evidence does not support the conclusion in the proposed finding of fact, and the evidence cited contradicts the proposed finding of fact. For example, language in the Board’s decision contradicts the conclusion reflected in this proposed finding of fact. Dkt. 103, PFF ¶¶ 202, 215, 265–266. Plaintiffs also dispute that Hazelmere proposed that flue gas be defined “as beginning ‘from the upper furnace region.’” Dkt. 103, PFF ¶¶ 243–245, 253. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C)(4)(a).

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the cited materials do not contradict the stated fact and Def. PFF ¶ 261 is supported by the cited evidence. For example, Pl. PFF ¶¶ 202, 215, 265–266 do not discuss Hazelmere’s proposed definition of flue gas. D.I. # 103, Pl. PFF ¶¶ 202, 215, 265–266. And Pl. PFF ¶ 253 in fact supports Def. PFF ¶ 261 by directly quoting

Hazelmere's brief, which states "[t]o persons of ordinary skill in the art, 'flue gas' means that region of combustion gases from the upper furnace region through the emission control devices." D.I. # 103, Pl. PFF ¶ 253.

262. *Although the PTAB indicated a temperature of 1260 °C "or higher," a POSA would understand the reference to "or higher" to mean that the temperatures that the Board describes for each location are not exact, and that the Board simply avoided announcing an exact temperature limit for the upper region of the boiler.*

D.I. # 76, Second Wilcox Report ¶ 30; D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 368.

Pl. Response: Disputed. This proposed finding of fact does not reflect a "fact," but rather is argument. It is disputed and contradicted by the evidence. Dkt. 103, PFF ¶¶ 265-In the PTAB decision, a reference to 1260°C was a reference to the upper region of the furnace. The reference "or higher" was indicative that flue gas exists upstream of the upper furnace region, inclusive of the combustion zone. *See* Plaintiffs' Opposition to Defendants' Motion for Summary Judgment, Section II (C)(4)(c). Further, even Dr. Wilcox testified that the reference to "1260°C or higher" included temperatures as high as 1370°C, which she elsewhere agreed was temperatures found in the combustion zone. Dkt. 103, ¶¶ 132, 212, 235, 262, 263, 301.

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion, and the cited materials do not contradict the stated fact. Pl. PFF ¶ 265 merely states Fry's interpretation of language in the PTAB decision, rather than providing the language itself. D.I. # 103, Pl. PFF ¶ 265. Moreover, higher temperatures may exist in parts of the combustion system, including the combustion zone, but that does not put in dispute that the upper temperature of 1260 °C or higher corresponds to the upper region of the furnace.

263. *Just before indicating a temperature of 1260 °C "or higher," the PTAB, in the same paragraph, cited to a different piece of prior art that describes the typical temperature at the exit of the furnace (i.e., within the upper region of the furnace) as around 1371 °C (2500 °F).*

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 367 (Mark Decl. Ex. 185, Evan J. Granite et al., Sorbents for Mercury Removal from Flue Gas, U.S. DEP'T OF ENERGY FED. ENERGY TECH, CTR 17 (1998)); D.I. # 76, Second Wilcox Report ¶ 30.

Pl. Response: Disputed. The proposed finding of fact is vague, ambiguous and incomprehensible in its use of the phrase "a different piece of prior art." It does not provide the necessary antecedent from which one can comprehend what is meant by "different." As such, Plaintiffs dispute the proposed finding of fact as phrased. Plaintiffs do not dispute that the PTAB decision did make a citation to the cited Granite reference. However, in the PTAB decision, a reference to 1260°C was a reference to the upper region of the furnace. The reference "or higher" was indicative that flue gas exists upstream of the upper furnace region, inclusive of the combustion zone. *See* Plaintiffs' Opposition to Defendants' Motion for Summary Judgment, Section II (C)(4)(c). Further, even Dr. Wilcox

testified that the reference to “1260°C or higher” included temperatures as high as 1370°C, which she elsewhere agreed was temperatures found in the combustion zone. Dkt. 103, ¶¶ 132, 212, 235, 262, 263, 301.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the cited materials do not contradict the stated fact. Rather, Plaintiffs do not dispute Def. PFF ¶ 263. With regard to Wilcox’s testimony, higher temperatures may exist in parts of the combustion system, including the combustion zone, but that does not put in dispute that the upper temperature of 1260 °C or higher corresponds to the upper region of the furnace.

264. *Regardless of what the exact typical temperature is, the PTAB explicitly chose the temperature that corresponded to the upper region of the boiler rather than the temperature that corresponded to “the coal input to the boiler.”*

D.I. # 76, Second Wilcox Report ¶ 30; D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 368.

Pl. Response: Disputed. This proposed finding of fact reflects argument rather than a “fact.” The cited evidence does not support the conclusion in the proposed finding of fact, and the evidence cited contradicts the proposed finding of fact. For example, language in the Board’s decision contradicts the conclusion reflected in this proposed finding of fact. Dkt. 103, PFF ¶¶ 202, 215, 265-266. Further, the PTAB decision needed only to address that portion of the boiler that was relevant to addressing the argument made by Hazelmere with respect to the Requestor’s argument, which required reference only to a region containing flue gas as far upstream as the upper furnace region. But, contradicting Defendants’ proposed fact finding, the PTAB explicitly was careful to include flue gas further upstream, inclusive of the combustion zone, by adding the qualifier “or higher” in its reference to the temperature of 1260°C indicative, for purposes of the PTAB’s discussion, of the upper furnace region. *See* Plaintiffs’ Brief in Opposition to Defendants’ Motion for Summary Judgment, Section II (C)(4)(c).

Def. Reply: Undisputed. Def. PFF ¶ 264 asserts the fact that “the PTAB explicitly chose the temperature that corresponded to the upper region of the boiler rather than the temperature that corresponded to ‘the coal input to the boiler.’” The response asserts additional facts about the Decision on Appeal, but does not dispute that the PTAB held as described by Defendants. Moreover, Def. PFF ¶ 264 does not mischaracterize the cited evidence; rather, it is an accurate summary of the Decision on Appeal. Further, Plaintiffs have not cited evidence to support their assertion that the PTAB’s quoted holding is contradicted elsewhere in the Decision on Appeal. Pl. PFF ¶¶ 202 and 215 quote directly from the Decision on Appeal regarding preliminary statements made prior to the analysis completed to make a final decision. D.I. # 103, Pl. PFF ¶¶ 202, 215. Further, PFF ¶ 215 concerns whether there are any temperature or location limits for the claimed treatment with “flue gas,” not for the definition of flue gas. D.I. # 103, Pl. PFF ¶ 215. Pl. PFF ¶¶ 265–66 merely state Fry’s interpretation of language in the PTAB decision; his opinion does not deny that the PTAB chose the temperature that it had associated with the upper furnace of the boiler, but only disputes the implication of that choice. D.I. # 103, Pl. PFF ¶¶ 265–66. The response also asserts

additional facts about the temperatures that may exist in parts of the combustion system, including the combustion zone, but that does not put in dispute that in the Decision on Appeal, the PTAB held that the upper temperature of “1260 °C or higher” corresponds to the upper region of the furnace.

265. *The PTAB adopted a definition of “flue gas” based on its location, explaining that flue gas is not all of the combustion gas, but only the gas “between the boiler and the stack outlet.”*

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 368.

Pl. Response: Disputed. The proposed finding of act is not supported by the evidence cited. It is directly contradicted by statements made within the same document cited as well as other evidence, including opinions of Dr. Fry. Dkt. 103, Plaintiffs’ PFF ¶¶ 202, 261, 265-266. *See also* Plaintiffs’ Brief in Opposition to Defendants’ Motion for Summary Judgment, Section II (C)(4)(c).

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, the cited materials do not contradict the stated fact, and Def. PFF ¶ 265 is supported by the cited evidence. For example, Plaintiffs’ cited evidence explicitly quotes the PTAB decision, which states “prior art related to treating flue gas from coal combustion supports the finding that flue gas treatment materials may be injected in several locations between the boiler and the stack outlet.” D.I. # 103, Pl. PFF ¶ 261.

266. *On appeal, the PTAB held that the patent was not invalid for lack of written description.*

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 376.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

267. *In holding that the patent was not invalid for lack of written description, the PTAB cited the same Paulik reference relied on in Hazeltine’s appeal brief, and stated:*

Although only particular bromide compounds are named, the inventors of the [’692 Patent] patent had possession of the characteristic of bromide compounds that decompose to elemental bromine as the basis of their invention and, thus, possessed the scope of all bromide salt compounds that decompose to elemental bromine. We agree with the Examiner that one of ordinary skill in the art would have been able to readily determine which bromide compounds decompose to elemental bromine at flue gas temperatures. In fact, Requester admits that calcium bromide decomposes to elemental bromide at temperatures of 752°C and above. Req. App. Br. 18; see also Paulik et al., “Examination of the Decomposition of CaBr₂ with the Method of Simultaneous TG, DTG, DTA and EGA,” 15 J. Thermal Analysis (1979) (“Paulik”) at 276 (stating that “slow

decomposition of CaBr₂ began even in the solid state at about 500°, “decomposition was complete at 1000°,” and “no HBr, but only Br₂ was formed”). Although the reaction may be somewhat less favorable at higher temperatures, Requester has provided no persuasive evidence that the skilled artisan would expect no mercury conversion in the presence of elemental bromine at flue gas temperatures higher than 527°C.

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 377; Mark Decl. Ex. 156, F. Paulik et. al., Examination of the Decomposition of CaBr₂ With the Method of Simlutaneous TG, DTG, DTA and EGA, 15 JOURNAL OF THERMAL ANALYSIS 271, 276 (1978).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

268. *The PTAB held that “[t]he ’692 [P]atent provides descriptive support for the class of bromide salts that thermally decompose, or ‘a bromide compound that is a thermolabile molecular bromine precursor,’ as claimed, and written descriptive support for magnesium bromide and calcium bromide salts in particular.”*

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 375.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

269. *The PTAB found the ’692 Patent not invalid for lack of enablement, relying on the Paulik reference cited by Hazelmere:*

Requester has not persuasively demonstrated unpredictability in the art in determining which bromide compounds decompose to elemental bromine at flue gas temperatures without undue experimentation. To the contrary, Requester presents evidence that at least some such decomposition information for bromide compounds, namely calcium bromide, was available as early as 1978. Req. App. Br. 18; See Paulik. Accordingly, Requester has not adequately demonstrated that the skilled artisan would not have been able to reasonably predict the bromide compounds that would have decomposed to elemental bromine at flue gas temperatures.

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 378; Mark Decl. Ex. 156, Paulik et. al., Examination of the Decomposition of CaBr₂ With the Method of Simlutaneous TG, DTG, DTA and EGA, 15 JOURNAL OF THERMAL ANALYSIS 271, 276 (1978).

Pl. Response: Disputed. Plaintiffs do not dispute that the quoted language appears in the Board’s Decision. However, the proposed finding of fact, as phrased, suggests that the Paulik reference was the *only* basis for the Board’s decision that the ’692 Patent was not invalid for lack of enablement. On the contrary, the quoted language indicates otherwise and explains that the Requester had failed to prove unpredictability. For example, “Requester has not persuasively demonstrated unpredictability in the art in determining which bromide compounds decompose to elemental bromine at flue gas temperatures

without undue experimentation,” and “Requester has not adequately demonstrated that the skilled artisan would not have been able to reasonably predict the bromide compounds that would have decomposed to elemental bromine at flue gas temperatures.” Dkt. 35-10, Decision on Appeal (Dec. 12, 2013), at 378. The Decision was made based on the Requester’s failure to carry its burden of proof, rather just on the Paulik reference itself.

Def. Reply: Undisputed. The response asserts an additional fact, but it raises no dispute of the proposed fact.

270. *With regard to the ‘692 Patent, the PTAB stated that the “the method step includes only injecting material into a flue gas stream, which appears to be a common practice in the art.”*

D.I. # 35-10, Decision on Appeal (Dec. 12, 2013), at 378.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

I. Reissued ‘692 Patent Claims

271. *The claimed invention of the ‘692 Patent is directed to a method of reducing mercury emissions from coal-fired power plants by treating the coal combustion flue gas by “injecting into” such gas.*

D.I. # 35-1, U.S. Patent No. 6,808,692.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. The claimed invention is defined by the claims of the Patent as they exist following the reexamination.

Def. Reply: Undisputed. Def. PFF ¶ 271 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 271 to the ‘692 Patent.

272. *Independent claim 1 of the ‘692 Patent is directed to a method for treating “coal combustion flue gas” by “injecting” a thermolabile molecular bromine precursor “into said flue gas.”*

D.I. # 35-1, ‘692 Patent Inter Partes Reexamination Certificate at 2:42–51.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. The claimed invention of Claim 1 is defined by the entire language of Claim 1 of the Patent as it exists following the reexamination, and subject to the parties’ agreed-upon construction of thermolabile molecular bromine precursor. Dkt. 82.

Def. Reply: Undisputed. Def. PFF ¶ 272 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 272 to the ‘692 Patent.

273. *Independent claim 19 of the '692 Patent is directed to a method of treating "flue gas . . . produced during the combustion of coal."*

D.I. # 35-1, '692 Patent Inter Partes Reexamination Certificate at 2:58–60.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. The claimed invention of Claim 19 is defined by the entire language of Claim 19 of the Patent as it exists following the reexamination, and subject to the parties' agreed-upon construction of thermolabile molecular bromine precursor. Dkt. 82.

Def. Reply: Undisputed. Def. PFF ¶ 273 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 273 to the '692 Patent.

274. *The U.S. Patent and Trademark Office issued the Patent Inter Partes Reexamination Certificate for the '692 Patent on April 7, 2014.*

D.I. # 35-1, '692 Patent Inter Partes Reexamination Certificate.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

275. *Claims 13 through 15 of the '692 Patent require the use of common particulate collection devices, which were well known at the time of the claimed invention.*

D.I. # 35-1, '692 Patent at 12:3–10 (describing electrostatic precipitator, baghouse, and fabric filter); D.I. #75, First Wilcox Report ¶¶ 202, 208 ("Among the very common types of particulate matter collection devices in use and known to POSAs were fabric filters, baghouses, and electrostatic precipitators."); D.I. #71, Fry Dep. 82:9–25.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. The claimed invention of Claims 13, 14 and 15 are defined by the entire language of each respective claim as it exists following the reexamination, and subject to the parties' agreed-upon construction of thermolabile molecular bromine precursor. Plaintiffs do not dispute that at least some form of an electrostatic precipitator, and at least some form of baghouse, and at least some form of fabric filter existed prior to the '692 invention.

Def. Reply: Undisputed. Def. PFF ¶ 275 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 275 to the '692 Patent.

276. *Claims 18 and 27 add the use of the ash in cementitious products, which was the most common use of ash from coal combustion systems, including at the time of the claimed invention.*

D.I. # 35-1, '692 Patent at 12:16–19; D.I. #75, First Wilcox Report ¶¶ 114 ("A POSA would understand that fly ash from coal combustion is

commonly used in cementitious products.”), 154, 189; D.I. # 72, First Fry Report ¶ 61.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. The claimed invention of Claims 18 and 27 are defined by the entire language of each respective claim as it exists following the reexamination, and subject to the parties’ agreed-upon construction of thermolabile molecular bromine precursor...In claim 18, it is provided that “the mercuric halide containing alkaline solid particles” produced by the method claimed in claim 1, “are suitable for use in cementitious products. The method of claim 1 was not known prior to the ’692 invention, and thus neither was that of claim 18.

In claim 27, it is provided that after the method of claim 19 is performed, an additional step is performed of “incorporating the solid alkaline particles collected at step [claim 1](b) into a cementitious product. The method of claim 19 was not known prior to the ’692 invention, and thus neither was that of claim 27.

Def. Reply: Undisputed. Def. PFF ¶ 276 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 276 to the ’692 Patent. Plaintiffs merely state that the methods of Claims 18 and 27 were not known prior to the ’692 Patent, but provides no citation and does nothing to dispute the evidence cited by Defendants.

277. *Other claims require that the coal being burnt is either subbituminous coal or lignite coal.*

D.I. # 35-1, ’692 Patent at 11:12–16.

Pl. Response: Disputed, as vague as to “other claims.” Undisputed to the extent that Claims 9 and 23 do refer to subbituminous coal or lignite coal.

Def. Reply: Undisputed.

278. *Claims 10 and 24 of the ’692 Patent require that the alkaline solid particles come from the fusion of alkali flux with the coal ash.*

D.I. # 35-1, ’692 Patent at 11:15–17, Inter Partes Reexamination Certificate at 4:7–9.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. The claimed invention of Claims 10 and 24 are defined by the entire language of each respective claim as it exists following the reexamination, and subject to the parties’ agreed-upon construction of thermolabile molecular bromine precursor...Undisputed that the language of claim 10 provides: “A method as claimed in claim 1, wherein the alkaline solid particles are those derived from the fusion of coal ash with alkali and an alkali flux.” Undisputed that the language of claim 24 provides: “The method of claim 19 wherein the alkaline solid particles provided at Step [claim 19](b) are derived from the fusion of coal ash with alkali with an alkali flux.

Def. Reply: Undisputed. Def. PFF ¶ 278 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 278 to the ’692 Patent.

IX. THE CLAIM TERMS “FLUE GAS” AND “INJECTING INTO FLUE GAS”

279. *Flue gas is formed from the combustion of coal.*

D.I. # 72, First Fry Report ¶¶ 97-98; D.I. # 76, Second Wilcox Report ¶ 36.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

280. *All combustion flue gas contains mercury.*

D.I. # 75, First Wilcox Report ¶ 37; D.I. # 72, First Fry Report ¶¶ 61, 68 (“Some mercury (elemental symbol Hg) is contained in all coals but varies greatly in concentration depending on the coal type and source.”).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

281. *Flue gas contains fly ash particles that contain alkaline compounds such as CaO and MgO, which are ubiquitous in coal ash.*

D.I. # 75, First Wilcox Report ¶¶ 119, 149; D.I. # 72, First Fry Report ¶¶ 61, 200.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

282. *There is no dispute among the parties that the combustion of coal eventually results in “coal combustion flue gas.”*

D.I. # 76, Wilcox Report ¶ 16; D.I. # 72, First Fry Report ¶ 95.

Pl. Response: Undisputed by Plaintiffs that the combustion of coal results in “coal combustion flue gas.” However, it is not clear what is meant by Defendants’ use of the word “eventually.” Plaintiffs submit that the evidence demonstrates that flue gas is the gas that results from coal combustion. Dkt. 72, First Fry Report ¶ 95.

Def. Reply: Undisputed.

283. *Lokenvitz testified that “flue gas” is the gas “in the ductwork . . . after it’s left the boiler.”*

Case 280 D.I. # 66, Lokenvitz Dep. 99:20–25; 103:3–4, 113:9–11, 129:21–23, 131:24–25.

Pl. Response: Undisputed that this is a partial quotation of the deposition testimony of Mr. Lokenvitz.

Def. Reply: Undisputed.

284. *The reference book “Combustion Engineering” defines “Flue Gas,” as “[t]he gaseous products of combustion in the flue to the stack.”*

*D.I. # 76, Second Wilcox Report ¶ 34; Mark Decl. Ex. 189,
COMBUSTION ENGINEERING: A REFERENCE BOOK ON FUEL
BURNING AND STEAM GENERATION (2d ed., 1967) Appendix B-13.*

Pl. Response: Disputed. The citation to “Combustion Engineering” is incomplete. The quotation from Appendix B provided in the proposed fact finding is accurate. However, as a citation to the reference book in general, it is incomplete. One need only look beyond the appendix to see the actual text of Combustion Engineering uses the term “flue gas” to refer to the gas in the combustion zone. In a chapter titled “Combustion and Boiler Calculations,” Combustion Engineering states the following: “These calculations are subject to the allowances for unburned carbon. This is because not all the carbon is burned. Some of it drops into the ashpit and some is carried out of the furnace with the flue gas.” Dkt. 108, PFF ¶ 321 (emphasis added). By stating that the ash is carried out of the furnace by “flue gas,” it is clear that a POSA would understand that the “flue gas” must have existed in the furnace.

Def. Reply: Undisputed. Plaintiffs have not cited evidence to support their response. Moreover, Pl. PFF ¶ 321 cites to a Klingman Exhibit that does not contain the page cited to in the relevant PFF.

285. *As defined in “Combustion Engineering,” the flue does not include the combustion zone of the boiler, and those locations are downstream of the combustion zone—after the “nose arch” found in most boilers.*

*D.I. # 76, Second Wilcox Report ¶ 34; Mark Decl. Ex. 189,
COMBUSTION ENGINEERING: A REFERENCE BOOK ON FUEL
BURNING AND STEAM GENERATION (2d ed., 1967) Appendix B-13;
D.I. # 71, Fry Dep. 87:16–89:6.*

Pl. Response: Disputed. This proposed finding of fact is vague, ambiguous and incomprehensible. It is not clear what is meant by “those locations”—the phrase appears to refer to the “flue” and the “combustion zone of the boiler” but states that “those locations are downstream of the combustion zone—after the “nose arch” found in most boilers.” As phrased, the proposed finding of fact is illogical because it appears to state that the combustion zone of the boiler is downstream of the combustion zone. Furthermore, the cited testimony from Dr. Fry does not refer to a “flue” but rather to “ductwork,” and therefore does not support the statement made in this proposed finding of fact for that reason as well. Dkt. 71, Fry Dep. 87:16–89:6.

The citation to “Combustion Engineering” is incomplete. The quotation from Appendix B provided in the proposed fact finding is accurate. However, as a citation to the reference book in general, it is incomplete. One need only look beyond the appendix to see the actual text of Combustion Engineering uses the term “flue gas” to refer to the gas in the combustion zone. In a chapter titled “Combustion and Boiler Calculations,” Combustion Engineering states the following: “These calculations are subject to the allowances for unburned carbon.

This is because not all the carbon is burned. Some of it drops into the ashpit and some is carried out of the furnace with the flue gas.” Dkt. 108, PFF ¶ 321 (emphasis added). By stating that the ash is carried out of the furnace by “flue gas,” it is clear that a POSA would understand that the “flue gas” must have existed in the furnace.

Def. Reply: Undisputed. Plaintiffs have not cited evidence to support their response. The cited paragraph in Wilcox’s report refers to the “flue,” not to the “ductwork.” D.I. # 76, Second Wilcox Report ¶ 34. As stated in the PFF, the asserted facts derive from definitions provided in “Combustion Engineering”—specifically, the glossary entries for “flue” and “flue gas.” As defined in “Combustion Engineering,” the flue does not include the combustion zone of the boiler.

Further, Pl. PFF ¶ 321 cites to a Klingman Exhibit that does not contain the page cited to in the relevant PFF.

286. *Plaintiffs’ expert witness, Andrew Fry, cites the treatise “Steam” for the putative definition of flue gas as “products of combustion.”*

D.I. # 72, First Fry Report ¶ 97 (“the publication ‘Steam’ specifically explains that ‘flue gas’ means ‘products of combustion.’”).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

287. *The phrase “products of combustion” does not appear in a glossary in “Steam” but instead appears as a parenthetical shorthand in an introductory overview of steam boilers.*

D.I. # 72, First Fry Report ¶ 97; D.I. # 35–15, Steam Generation: An Overview, in STEAM: ITS GENERATION AND USE (Steven C. Shultz and John B. Kotto eds., 40th ed. 1992), at 1-3.

Pl. Response: Disputed. The cited page of the Steam reference does not use the phrase “products of combustion” in a parenthetical. Dkt. 35–15, *Steam Generation: An Overview*, in STEAM: ITS GENERATION AND USE (Steven C. Shultz and John B. Kotto eds., 40th ed. 1992), at 1-3. The phrase “products of combustion” also appears elsewhere in Steam, so to the extent this proposed finding of fact is intended to say that the phrase is only used on the cited, page, that is disputed as well. See, e.g., STEAM: ITS GENERATION AND USE (Steven C. Shultz and John B. Kotto eds., 40th ed. 1992), at 1-8, 9-14

Def. Reply: Undisputed. Plaintiffs do not dispute that the phrase “products of combustion” does not appear in the glossary of *Steam*.

288. 

[REDACTED]

[REDACTED]

[REDACTED]

289. *A POSA would conclude that the correct construction of “coal combustion flue gas” as used in the claims of the ’692 Patent is “the gases in the region above the combustion zone through the stack outlet that result from the substantially-complete combustion of coal.”*

D.I. # 75, First Wilcox Report ¶¶ 100–101.

Pl. Response: Disputed. The proposed fact is argumentative. “Arguments have no place in proposed findings of fact or responses to such findings.” *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007). Indeed, it is simply a recitation of Defendants’ proposed construction of “flue gas,” over which the parties have exchanged voluminous briefing. It is an inappropriate. This proposed finding of fact is disputed, including as set forth in Dr. Fry’s First and Second Expert Reports which explain that “flue gas” and “coal combustion flue gas” is “the gas produced during the combustion of coal.” Dkt. 72 at ¶¶ 83, 87–114; Dkt. 73 at ¶¶ 92–93, 96–126. This proposed finding of fact is further disputed as the parties disagree as to the correct definition of “flue gas” and “coal combustion flue gas.” Dkt. 82 (Amended Joint Table of Terms Requiring Construction) at p. 2. It further is contradicted by the testimony of Dr. Wilcox, who testified that flue gas is “born” in the combustion zone. Plaintiffs’ PFF ¶¶ 198 - 201. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (A)-(C).

Def. Reply: Undisputed. The patent owner has already admitted that the proper construction of “coal combustion flue gas” is as set forth in the patent owner’s brief on appeal before the PTAB. That construction is consistent with Defendants’ proposed construction, but not Plaintiffs’. The evidence cited by Plaintiffs is not responsive because it offers

opinions from Plaintiffs' expert, Fry, that the claim terms are broader than the "broadest reasonable interpretation" advocated by the patent owner. Moreover, Wilcox did not testify that flue gas was born in the combustion zone. The record shows that at 144:10–15, Wilcox testified as follows:

A. And I would say just like the patent that you showed me, they would say that that -- and just like all the definitions that Andrew Fry gave in his expert report and responses, yes, that is where flue gasses are borne in the furnace because that is what oxidation of coal means. But it doesn't mean that that is the same as flue gas. And so it's not easy to say yes or no because that would imply that that's flue gas and it's not. It's where it's borne, and it quickly leaves that region, and that region is fuel-rich and it's not flue gas. D.I. # 69, Wilcox Dep. 144:10–15.

290. *There is no dispute that the term "flue gas. . . produced during the combustion of coal" in claim 19 should be construed in the same way as "coal combustion flue gas."*

D. I. # 76, Second Wilcox Report ¶ 14; D.I. # 72, First Fry Report ¶ 283.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

291. *The '692 Patent reports several simple arithmetic calculations from published literature data regarding the thermochemical properties of common chemicals.*

D.I. # 35-1, '692 Patent; D.I. # 76, Second Wilcox Report ¶ 22.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

292. *A POSA would understand "injecting. . . into said flue gas" to be a term of art that refers to a method for introducing chemicals into flue gas, exemplified by the introduction of chemicals into flue gas ductwork using lances.*

D.I. # 76, Second Wilcox Report ¶¶ 53–54.

Pl. Response: Disputed. The proposed fact is argumentative. "Arguments have no place in proposed findings of fact or responses to such findings." *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007). This supposed "finding of fact" is a form of Defendants' claim construction argument, and not a proper fact finding. This supposed fact finding is contradicted by all of the evidence such as Dr. Fry's opinion (see Dkt. 74, Fry Third Report, ¶ 63) and other evidence cited by Plaintiffs in the portion of their Responsive Brief to Defendants Summary Judgment relevant to the meaning of "injecting ... into flue gas", including but not limited to Plaintiffs' PFF ¶ 440. *See also* Plaintiffs' Opposition to Defendants' Motion for Summary Judgment, Section II (A), (B) and (D).

Def. Reply: Undisputed. Plaintiffs have not cited with specificity evidence that disputes the stated fact. The one specific piece of evidence Plaintiffs cite to Pl. PFF ¶ 440 which states, “U.S. Patent No. 5,645,805 describes that the additive in that invention can be incorporated in to the fuel, or injected in the combustion zone, or the flue. C. Klingman Decl. ¶ 63 (Exhibit 64) (5,645,805)” and does not support that assertion at issue.

293. *The combustion zone does not contain flue gas, when that term is properly understood.*

D.I. # 75, First Wilcox Report ¶ 110; D.I. # 76, Second Wilcox Report ¶¶ 21, 28, 33–34.

Pl. Response: Disputed. This proposed finding of fact is disputed as set forth in Dr. Fry’s First and Second Expert Reports which explain that flue is created in, and exists in, the combustion zone. Dkt. Nos. 72 at ¶¶ 83, 87–114; Dkt. No. 73 at ¶¶ 92–93, 96–126 Dr. Wilcox disagreed, testifying that flue gas is born in the combustion zone. Dkt. 69, Wilcox Dep., 121:19–122:12. This proposed finding of fact is further disputed as the parties disagree as to the correct definition of “flue gas” and “coal combustion flue gas.” Dkt. No. 82 (Amended Joint Table of Terms Requiring Construction) at p. 2. Plaintiffs further object to this proposed fact as stating a legal conclusion, and as argumentative. *American National Property & Cas. Co. v. Graham*, No. 04-C-1185, 2006 U.S. Dist. LEXIS 41235 at *3–4 (E.D. Wis. June 2, 2006) (legal conclusions inappropriate as factual findings; such advocacy must be left to the argument portion of a brief and not proposed as a finding of fact); *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C).

Def. Reply: For the reasons set forth in D.I. # 107, Def. Op. Br. § II, Plaintiffs’ assertion about the combustion zone containing flue gas is unsupported and incorrect. Moreover, Wilcox did not testify that flue gas was born in the combustion zone. The record shows that at 144:10–15, Wilcox testified as follows:

A. And I would say just like the patent that you showed me, they would say that that -- and just like all the definitions that Andrew Fry gave in his expert report and responses, yes, that is where flue gasses are borne in the furnace because that is what oxidation of coal means. But it doesn’t mean that that is the same as flue gas. And so it’s not easy to say yes or no because that would imply that that’s flue gas and it’s not. It’s where it’s borne, and it quickly leaves that region, and that region is fuel-rich and it’s not flue gas. D.I. # 69, Wilcox Dep. 144:10–15.

294. *Even Plaintiffs’ expert witness, Andrew Fry, admits that “flue gas” does not refer to all the gases in the combustion zone.*

D.I. # 72, Fry. Dep. 162:12–14 (“Q: Now, in the boiler, you’ve testified that, in addition to flue gas, there’s also air. Right? A: Yes.”).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

295. *Plaintiffs' expert witness, Andrew Fry, testified that at Columbia and Weston, it is not until "after the combustion zone, and especially through the convective section, [that] the gases mix extensively, and it becomes homogeneous and is all referred to as flue gas."*

D.I. # 71, Fry Dep. 162:19–163:2.

Pl. Response: Disputed. This is an incomplete statement of Dr. Fry's testimony taken out of context. He testified that he uses the phrases "combustion products" interchangeably with "flue gas." Dkt. 71, Fry Dep. 118:1-5. He testified that combustion products, or flue gas, arise in the combustion zone. Dkt. 71, Fry Dep. 119:13-16. Dr. Fry testified, referring to the '692 Patent: "The way I read that is that the flue gas is generated in a coal combustor and can exist anywhere that the gas stream takes it, from the combustion all the way through those devices that are indicated." Dkt. 71, Fry Dep. 184:11-19. Dr. Wilcox agreed, saying flue gas is "born" in the combustion zone. Plaintiffs' PFF 198, 199, 200, 201. Dr. Fry explained that air is also in the combustion zone, and it mixed with the flue gas as the air and flue gas move downstream, until the mixing is sufficiently complete where the air cannot be separately distinguished, where it then is all referred to as flue gas. Dkt. 71, Fry Dep. 162:19–163:2.

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion, and the cited materials do not contradict the stated fact.

Moreover, Wilcox did not testify that flue gas was born in the combustion zone. The record shows that at 144:10–15, Wilcox testified as follows:

A. And I would say just like the patent that you showed me, they would say that that -- and just like all the definitions that Andrew Fry gave in his expert report and responses, yes, that is where flue gasses are borne in the furnace because that is what oxidation of coal means. But it doesn't mean that that is the same as flue gas. And so it's not easy to say yes or no because that would imply that that's flue gas and it's not. It's where it's borne, and it quickly leaves that region, and that region is fuel-rich and it's not flue gas. D.I. # 69, Wilcox Dep. 144:10–15.

296. *The specification would assist a POSA in understanding the meaning of the term "injecting . . . into . . . flue gas" as it is used in the claims.*

D.I. # 76, Second Wilcox Report ¶ 21.

Pl. Response: Disputed. The proposed fact is argumentative. "Arguments have no place in proposed findings of fact or responses to such findings." *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007). Further, it is a statement of law related to claim construction, and not a finding of fact. The law governing claim construction is provided in *Phillips* and other cases, and those cases define the role of the specification in the claim construction process. See, e.g., *Phillips v. AWH Corp.*, 415 F.3d 1303,

1312-14 (Fed. Cir. 2015); *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001).

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion, and the cited materials do not contradict the stated fact.

297. *According to Plaintiffs' expert witness, Andrew Fry, the gases in the lower furnace consist of air and flue gas.*

D.I. # 72, Fry. Dep. 162:12–14 (“Q: Now, in the boiler, you’ve testified that, in addition to flue gas, there’s also air. Right? A: Yes.”).

Pl. Response: Disputed. Dr. Fry testified that the region of the combustion zone includes flue gas and air, but is not necessarily limited to those things. For example, it can include unburned fuel and ash. Dkt. 72, Fry. Dep., 119:13–120:03.

Def. Reply: Undisputed. The response asserts an additional fact, but it raises no dispute of the proposed fact.

298. *According to Plaintiffs' expert witness, Andrew Fry, the gas after the combustion zone is all referred to as “flue gas.”*

D.I. # 72, Fry Dep. 162:23–163:2 (“It’s my opinion that after the combustion zone, and especially through the convective section, the gases mix extensively, and it becomes homogeneous and is all referred to as flue gas.”).

Pl. Response: Disputed. This mischaracterizes Dr. Fry's testimony. Dr. Fry stated that flue gas is the gas resulting from the combustion of coal, and is created in the combustion zone. Dr. Wilcox agreed, saying flue gas is “born” in the combustion zone. Dkt. 103 PFF ¶¶ 198 – 201. Dkt. 72, Fry Dep. 114:15–115:16. Dr. Fry explained that air is also in the combustion zone, and it mixed with the flue gas as the air and flue gas move downstream, until the mixing is sufficiently complete where the air cannot be separately distinguished, where it then is all referred to as flue gas. Dkt. 72, Fry Dep. 162:23–163:2.

Def. Reply: Undisputed. The response asserts an additional fact, but it raises no dispute of the proposed fact. Moreover, Wilcox did not testify that flue gas was born in the combustion zone. The record shows that at 144:10–15, Wilcox testified as follows:

A. And I would say just like the patent that you showed me, they would say that that -- and just like all the definitions that Andrew Fry gave in his expert report and responses, yes, that is where flue gasses are borne in the furnace because that is what oxidation of coal means. But it doesn't mean that that is the same as flue gas. And so it's not easy to say yes or no because that would imply that that's flue gas and it's not. It's where it's borne, and it quickly leaves that region, and that region is fuel-rich and it's not flue gas. D.I. # 69, Wilcox Dep. 144:10–15.

299. *When the term “coal combustion flue gas” is used in connection with coal-burning power plants, it refers to the gases that are produced from the combustion of coal after the combustion of coal is substantially complete.*

D.I. # 76, Second Wilcox Report ¶ 16.

Pl. Response: Disputed. This proposed finding of fact is argumentative and is a legal conclusion. *See American National Property & Cas. Co. v. Graham*, No. 04-C-1185, 2006 U.S. Dist. LEXIS 41235 at *3-4 (E.D. Wis. June 2, 2006) (legal conclusions inappropriate as factual findings; such advocacy must be left to the argument portion of a brief and not proposed as a finding of fact); *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). This proposed finding of fact is disputed as set forth in Dr. Fry’s First and Second Expert Reports which explain that flue is created in, and exists in, the combustion zone. Dkt. 72 at ¶¶ 83, 87–114; Dkt. 73 at ¶¶ 92–93, 96–126. Dr. Wilcox also testified that “flue gas” is born in the combustion zone. Dkt. 103 PFF ¶¶ 198 - 201. This proposed finding of fact is further disputed as the parties disagree as to the correct definition of “flue gas” and “coal combustion flue gas.” Dkt. No. 82 (Amended Joint Table of Terms Requiring Construction) at p. 2. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (C).

Def. Reply: For the reasons set forth in D.I. # 107, Def. Op. Br. § II, Plaintiffs’ assertion about the combustion zone containing flue gas is unsupported and incorrect. Moreover, Wilcox did not testify that flue gas was born in the combustion zone. The record shows that at 144:10–15, Wilcox testified as follows:

A. And I would say just like the patent that you showed me, they would say that that -- and just like all the definitions that Andrew Fry gave in his expert report and responses, yes, that is where flue gasses are borne in the furnace because that is what oxidation of coal means. But it doesn’t mean that that is the same as flue gas. And so it’s not easy to say yes or no because that would imply that that’s flue gas and it’s not. It’s where it’s borne, and it quickly leaves that region, and that region is fuel-rich and it’s not flue gas. D.I. # 69, Wilcox Dep. 144:10–15.

300. *Splitting the term of art “injecting . . . into . . . flue gas” into individual phrases and seeking to isolate the term “coal combustion flue gas” would ignore the critical context provided by the verb phrase “injecting . . . into.”*

D.I. # 76, Second Wilcox Report ¶ 20.

Pl. Response: Disputed. This proposed finding of fact is argumentative and is a legal conclusion. *See American National Property & Cas. Co. v. Graham*, No. 04-C-1185, 2006 U.S. Dist. LEXIS 41235 at *3-4 (E.D. Wis. June 2, 2006) (legal conclusions inappropriate as factual findings; such advocacy must be left to the argument portion of a brief and not proposed as a finding of fact); *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). Plaintiffs dispute Defendants’ proposed finding of

fact. Defendants' proposed fact is not a fact, but is an argument being made by Defendants, and is therefore objectionable. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) ("Arguments have no place in proposed findings of fact or responses to such findings."). Plaintiffs further dispute Defendants' proposed fact as the evidence makes clear that the appropriate terms in the '692 Patent that need to be construed are the terms as proposed by Plaintiffs: "injecting" and "flue gas." Dkt. 73, Fry Second Report, ¶¶ 127-141; Dkt. 74, Fry Third Report, ¶¶ 52-69. *See also* Plaintiffs' Opposition to Defendants' Motion for Summary Judgment, Section II (C).

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact.

301. *A POSA reading the '692 Patent at the time of its filing would understand the term "injecting . . . into the [or said] flue gas" to be a term of art denoting one class of methods for introducing additives to a combustion system to reduce emissions.*

D.I. # 76, Second Wilcox Report ¶ 53.

Pl. Response: Disputed. This proposed finding of fact is argumentative and is a legal conclusion. *See American National Property & Cas. Co. v. Graham*, No. 04-C-1185, 2006 U.S. Dist. LEXIS 41235 at *3-4 (E.D. Wis. June 2, 2006) (legal conclusions inappropriate as factual findings; such advocacy must be left to the argument portion of a brief and not proposed as a finding of fact); *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) ("Arguments have no place in proposed findings of fact or responses to such findings."). This supposed "finding of fact" is a form of Defendants' claim construction argument, and not a proper fact finding. This supposed fact finding is contradicted by all of the evidence such as Dr. Fry's opinion (*see* Dkt. 74, Fry Third Report, ¶ 63) and other evidence cited by Plaintiffs in the portion of their Responsive Brief to Defendants Summary Judgment relevant to the meaning of "injecting . . . into flue gas", including but not limited to Plaintiffs' PFF ¶ 440. *See also* Plaintiffs' Opposition to Defendants' Motion for Summary Judgment, Section II (D). *See also* Plaintiffs' response to Defendants' PFF 160, *supra*.

Def. Reply: Undisputed. Plaintiffs have not cited with specificity evidence that disputes the stated fact. The one specific piece of evidence Plaintiffs cite to Pl. PFF ¶ 440 which states, "U.S. Patent No. 5,645,805 describes that the additive in that invention can be incorporated in to the fuel, or injected in the combustion zone, or the flue. C. Klingman Decl. ¶ 63 (Exhibit 64) (5,645,805)" and does not support that assertion at issue.

302. *A POSA would understand "injecting. . . into said flue gas" to be a term of art that refers to a method for introducing chemicals into flue gas, exemplified by the introduction of substances into flue gas ductwork using lances.*

D.I. # 76, Second Wilcox Report ¶¶ 53-54.

Pl. Response: Disputed. This proposed finding of fact is argumentative and is a legal conclusion. *See American National Property & Cas. Co. v. Graham*, No.

04-C-1185, 2006 U.S. Dist. LEXIS 41235 at *3-4 (E.D. Wis. June 2, 2006) (legal conclusions inappropriate as factual findings; such advocacy must be left to the argument portion of a brief and not proposed as a finding of fact); *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). This supposed “finding of fact” is a form of Defendants’ claim construction argument, and not a proper fact finding. This supposed fact finding is contradicted by all of the evidence such as Dr. Fry’s opinion (*see* Dkt. 74, Fry Third Report, ¶ 63) and other evidence cited by Plaintiffs in the portion of their Responsive Brief to Defendants Summary Judgment relevant to the meaning of “injecting ... into flue gas”, including but not limited to Plaintiffs’ PFF ¶ 440. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (D). *See also* Plaintiffs’ response to Defendants’ PFF 160, *supra*.

Def. Reply: Undisputed. Plaintiffs have not cited with specificity evidence that disputes the stated fact. The one specific piece of evidence Plaintiffs cite to Pl. PFF ¶ 440 which states, “U.S. Patent No. 5,645,805 describes that the additive in that invention can be incorporated in to the fuel, or injected in the combustion zone, or the flue. C. Klingman Decl. ¶ 63 (Exhibit 64) (5,645,805)” and does not support that assertion at issue.

303. *A POSA would understand that the plain meaning of “injecting into flue gas” would refer to introduction into the gas after the upper furnace, typically into the flue gas ductwork.*

D.I. # 76, Second Wilcox Report ¶ 54.

Pl. Response: Disputed. This proposed finding of fact is argumentative and is a legal conclusion. *See American National Property & Cas. Co. v. Graham*, No. 04-C-1185, 2006 U.S. Dist. LEXIS 41235 at *3-4 (E.D. Wis. June 2, 2006) (legal conclusions inappropriate as factual findings; such advocacy must be left to the argument portion of a brief and not proposed as a finding of fact); *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). This supposed “finding of fact” is a form of Defendants’ claim construction argument, and not a proper fact finding. This supposed fact finding is contradicted by all of the evidence such as Dr. Fry’s opinion (*see* Dkt. 74, Fry Third Report, ¶ 63) and other evidence cited by Plaintiffs in the portion of their Responsive Brief to Defendants Summary Judgment relevant to the meaning of “injecting ... into flue gas”, including but not limited to Plaintiffs’ PFF ¶ 440. *See also* Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (D). *See also* Plaintiffs’ response to Defendants’ PFF 160, *supra*.

Def. Reply: Undisputed. Plaintiffs have not cited with specificity evidence that disputes the stated fact. The one specific piece of evidence Plaintiffs cite to Pl. PFF ¶ 440 which states, “U.S. Patent No. 5,645,805 describes that the additive in that invention can be incorporated in to the fuel, or injected in the combustion zone, or the flue. C. Klingman Decl. ¶ 63 (Exhibit 64) (5,645,805)” and does not support that assertion at issue.

304. *The claims of the '692 Patent use the specific term "injecting . . . into said flue gas" to specify the method by which the calcium bromide or other thermolabile molecular bromine precursor is introduced into the system in order to treat the flue gas.*

D.I. # 76, Second Wilcox Report ¶ 59.

Pl. Response: Disputed. The proposed fact is argumentative. "Arguments have no place in proposed findings of fact or responses to such findings." *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007). This supposed "finding of fact" is a form of Defendants' claim construction argument, and not a proper fact finding. In particular, it is unclear what Defendants mean by the qualifier "specific." If that term is removed, as Plaintiffs understand the remainder of the proposed fact finding, it would be Pl. Response: Undisputed.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact.

305. *The '692 Patent contains no description of pretreatment of coal with a thermolabile molecular bromine precursor, suggesting that the inventor did not possess, consider or suggest this method. Rather, the patent only contains theoretical descriptions of the expected effects from the addition of the thermolabile molecular bromine precursor to flue gas.*

D.I. # 75, First Wilcox Report ¶ 106.

Pl. Response: Disputed. Plaintiffs dispute Defendants' proposed finding of fact. The '692 Patent describes adding the thermolabile molecular bromine precursor to into the flue gas, without limiting the injection to any particular location within the range of locations where flue gas is present. Dr. Fry testified that a POSA would understand that injecting into flue gas can be accomplished at different locations, including the combustion zone. Dr. Fry expressly describes that the specification teaches making adjustments to injection parameters, such as droplet size, concentration and dosing levels that would only be relevant to injecting precursor in the combustion, whether mixed with the coal, or separately. Dkt. 74, ¶ 61.

Plaintiffs also object to this finding of fact as argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) ("Arguments have no place in proposed findings of fact or responses to such findings.").

Dkt. 73, Second Fry Report, ¶¶ 140–141; *see generally* Dkt. 35-1, '692 Patent.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact. The Third Fry report ¶ 61 describes alternative injection sites, not the possibility that the additive would be applied to the coal.

306. *Plaintiffs' expert witness, Andrew Fry, agrees that the '692 Patent does not actually discuss the addition of a thermolabile molecular bromine precursor to coal before combustion, or the addition into the combustion zone along with coal.*

D.I. # 71, Fry Dep. 174:8-19.

Pl. Response: Disputed. Dr. Fry expressly describes that the specification teaches making adjustments to injection parameters, such as droplet size, concentration and dosing levels that would only be relevant to injecting precursor in the combustion, whether mixed with the coal, or separately. Dkt. 74, ¶ 61.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact. The Third Fry report ¶ 61 describes alternative injection sites, not the possibility that the additive would be applied to the coal.

307. *Plaintiffs' expert witness, Andrew Fry, admitted that the '692 Patent referenced multiple patents and articles that do discuss "all three methods of introducing reagents into flue gas, including putting reagent on the fuel, injecting into the combustion zone, and injecting into the flue gas."*

D.I. # 71, Fry Dep. 174:1-7.

Pl. Response: Disputed. Dr. Fry described each of these as methods of injecting additives into flue gas. Dkt. 74, ¶ 63.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact.

308. *For the second step of the claimed process, the claims use the more general and unspecified language "providing alkaline solid particles in said flue gas."*

D.I. # 76, Second Wilcox Report ¶ 59.

Pl. Response: Disputed. This proposed finding of fact is disputed as Defendants have incorrectly characterized the claims as containing "general and unspecified language." Claim 1 of the '692 Patent reads as follows: A method of treating coal combustion flue gas containing mercury, comprising: injecting a bromide compound that is a thermolabile molecular bromine precursor into said flue gas to effect oxidation of elemental mercury to a mercuric bromide and providing alkaline solid particles in said flue gas ahead of a particulate collection device, in order to adsorb at least a portion of said mercuric bromide. Dkt. 35-1 at claim 1. *See* Plaintiffs' Opposition to Defendants' Motion for Summary Judgment, Section II (D)(4).

Plaintiffs also object to this finding of fact as argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) ("Arguments have no place in proposed findings of fact or responses to such findings.").

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact.

309. *In contrast to "injecting . . . into said flue gas," the claim language "providing alkaline solid particles in said flue gas" does not restrict the way that a substance is made available within the flue gas.*

D.I. # 76, Second Wilcox Report ¶ 59.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

310. *A POSA would understand “providing . . . in said flue gas” to permit the material “provid[ed]” to be introduced in any manner, including but not limited to any of the three main methodologies—i.e., by application onto the coal and introduced into the furnace along with the coal, or to be introduced by itself into the combustion chamber, or to be injected into the flue gas—as long as such substance is “provid[ed]” in the flue gas.*

D.I. # 76, Second Wilcox Report ¶ 59.

Pl. Response: Disputed. This proposed fact reflects opinion and argument rather than a fact. Dr. Fry’s opinion directly contradicts the opinion of Dr. Wilcox which is the only evidence on which Defendants rely to support this proposed fact. Dkt. 74, ¶ 57.

As Dr. Fry opined, the term “providing” in this context could include either of “adding the alkaline solid particles” as an additive, or, deriving “the alkaline solid particles from the coal itself.” *Id.* See Plaintiffs’ Opposition to Defendants’ Motion for Summary Judgment, Section II (D)(4).

Def. Reply: Undisputed. For the reasons set forth in D.I. # 107, Def. Op. Br. § II, Plaintiffs’ assertion regarding flue gas is unsupported and incorrect.

311. *A POSA would understand from the claim language that “injecting . . . into said flue gas” stands in stark contrast as but one method by which a substance can be “provid[ed]” in said flue gas.*

D.I. # 76, Second Wilcox Report ¶ 59.

Pl. Response: Disputed. This proposed fact reflects opinion and argument rather than a fact. Dr. Fry’s opinion directly contradicts the opinion of Dr. Wilcox, which is the only evidence on which Defendants rely to support this proposed fact. Dkt. 74, ¶ 57.

Def. Reply: Undisputed. For the reasons set forth in D.I. # 107, Def. Op. Br. § II, Plaintiffs’ assertion regarding flue gas is unsupported and incorrect.

312. *The use of the term “the flue gas” or “said flue gas” as the medium into which the thermolabile molecular bromine precursor is injected refers to the “coal combustion flue gas” described earlier in Claim 1, or the “flue gas . . . from the combustion of coal” described earlier in Claim 19.*

D.I. # 76, Second Wilcox Report ¶ 60.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

313. *A POSA would understand the term “coal combustion flue gas” to be actual flue gas, as described above, and would therefore understand “injecting . . . into said flue gas” to refer to the introduction of the compounds into that gas.*

D.I. # 76, Second Wilcox Report ¶ 60.

Pl. Response: Disputed. This proposed finding of fact is disputed as it is not clear what is meant by “as described above.” This proposed finding of fact is further disputed as the parties disagree as to the correct definition of “flue gas,” “coal combustion flue gas,” “injecting,” and “injecting into flue gas.” Dkt. No. 82 (Amended Joint Table of Terms Requiring Construction) at 2–3.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact.

314. *The discussion of “flue gas” in the Prosecution History also informs the meaning of “injecting . . . into said flue gas” by specifying the medium into which the thermolabile molecular bromine precursor is intended to be injected.*

D.I. # 76, Second Wilcox Report ¶ 67.

Pl. Response: Disputed. The proposed fact is argumentative. “Arguments have no place in proposed findings of fact or responses to such findings.” *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007). Whether, to what extent, and in what ways various statements in the prosecution “inform” the meaning of the phrase “injecting . . . into flue gas” is a disputed issue between the parties. Moreover, this proposed finding of fact is vague and incomprehensible in its use of the language “the discussion of ‘flue gas’ in the Prosecution History” without identifying which discussion it refers to. There are numerous mentions of flue gas in the prosecution history of the ’692 Patent, made by a variety of parties. The proposed finding of fact neither identifies which “discussion” it refers to, nor explains how any discussion purportedly “informs” the meaning of injecting . . . into said flue gas.” It is disputed on that basis. Defendants’ citation to Dr. Wilcox’s Second Expert Report also does not support the proposed finding of fact, as the cited paragraph refers to a patent discussed in the ’692 Patent’s specification and makes no mention of the prosecution history. Therefore, this proposed finding of fact is also disputed as having no citation to supporting evidence.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact. Proof of ¶ 314 is located in the Second Wilcox Report at ¶ 68.

X. BROMINE AND THE CLAIM TERM “THERMOLABILE MOLECULAR BROMINE PRECURSOR”

A. “Thermolabile”

315. *The word “thermolabile” is well-known to chemists.*

D.I. # 35-3, Oehr Decl. at ¶ 6.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document. Dkt. No. 35-3, Oehr Decl. at ¶ 6.

Def. Reply: Undisputed that “thermolabile” is well-known to persons having ordinary skill in the art. D.I. # 35-3, Oehr Decl. at ¶ 6.

316. *“Thermolabile” is a generally-used word that means that a chemical compound decomposes when heated.*

D.I. # 35-3, Oehr Decl. at ¶ 6; D.I. # 72, First Fry Report at ¶ 132.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the documents. Dkt. No. 35-3, Oehr Decl. at ¶ 6; Dkt. 72, First Fry Report at ¶ 132. Plaintiffs further dispute this proposed finding of fact as inconsistent with the parties’ proposed construction for “a bromide compound that is a thermolabile molecular bromine precursor” which the parties agree should be construed as “a bromide compound that decomposes at flue gas temperatures typical of coal-fired power plants which will lead to and result in the formation of molecular bromine (Br₂).” Dkt. 82 at 3.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact. Further, Def. PFF ¶ 315 does not mischaracterize the First Fry Report at ¶ 132, which states that “‘thermolabile’ is defined as ‘decomposed or destroyed by heat.’”

317. *Plaintiffs’ expert witness, Andrew Fry, could not identify a single bromine compound that would not decompose at 3000°F [1649°C], or even 2500°F [1371°C].*

D.I. # 71, Fry Dep. 243:4-15.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

318. *A bromide compound that is a thermolabile molecular bromine precursor is a bromide compound that decomposes at flue gas temperatures typical of coal-fired power plants, which will lead to and result in the formation of molecular bromine (Br₂).*

D.I. # 82, Amended Joint Table of Terms Requiring Construction (Apr. 15, 2019); D.I. # 74, Third Fry Report ¶ 90.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

B. Oehr's Admissions

319. *In a declaration that was filed with the complaints, Oehr states that "[a] thermolabile molecular bromine precursor would break down and create molecular bromine (Br₂)."*

D.I. # 35-3, Oehr Decl. (May 17, 2016) ¶ 6; Case 280 D.I. # 38-3.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. Mr. Oehr's statements about the invention must be read as a whole. Undisputed that the partial quotation from Mr. Oehr is of text found in that declaration.

Def. Reply: Undisputed that the quoted text in Def. PFF ¶ 319 is a direct quote from Oehr's declaration.

320. *In a declaration that was filed with the complaints, Oehr states that his "invention was directed at introducing a thermolabile molecular bromine precursor to permit it to break down when heated in coal combustion flue gas to create molecular bromine, which would then interact with mercury in coal combustion flue gas."*

D.I. # 35-3, Oehr Decl. (May 17, 2016) ¶ 7.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. Mr. Oehr's statements about the invention must be read as a whole. Undisputed that the partial quotation from Mr. Oehr is of text found in that declaration.

Def. Reply: Undisputed that the quoted text in Def. PFF ¶ 320 is a direct quote from Oehr's declaration.

321. *Oehr testified* [REDACTED]

D.I. # 63, Oehr Dep. 178:15-17.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

322. *In a declaration that was filed with the complaints, Oehr states that his discovery "was the fundamental chemistry of these reactions in the gas resulting from the combustion of coal."*

D.I. # 35-3, Oehr Decl. (May 17, 2016) ¶ 4; [REDACTED]

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. Mr. Oehr's statements about the invention must be read as a whole. Undisputed that the partial quotation from Mr. Oehr is of text found in that declaration.

Def. Reply: Undisputed that the quoted text in Def. PFF ¶ 320 is a direct quote from Oehr's declaration.

323. *The elements claimed in the '692 Patent other than the use of a thermolabile molecular bromine precursor to react with mercury are the routine and conventional components of coal-fired power plants that were well-known at the time the patent was filed.*

D.I. # 35-3, Oehr Decl. (May 17, 2016) ¶¶ 4, 7; [REDACTED].
[REDACTED] D.I. # 75, First Wilcox Report ¶¶ 119-20.

Pl. Response: Disputed. The proposed fact is argumentative. "Arguments have no place in proposed findings of fact or responses to such findings." *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007). The proposed fact (which is argument) is not supported by the cited testimony or statements of Mr. Oehr. The cited disposition testimony and language from the declaration does not refer to or characterize any claim element as being "routine" or "conventional." Moreover, the proposed finding of fact is directly refuted by opinion of Dr. Fry. Dkt. 73 at 188.

Def. Reply: Undisputed. Def. PFF ¶ 323 is supported by the Oehr declaration as evidenced by comparing Def. PFF ¶ 323 with the Oehr declaration and Plaintiffs have not cited evidence that disputes that. The evidence cited by Plaintiffs, The Second Fry Report at ¶ 188, states "Thus, it my opinion that the method of independent claims 1 and 19, as well as all asserted dependent claims, represent a technological solution to a technological problem, were neither routine or conventional in the field of coal-fired power plants in the 2001 and 2002 time frame, and are thus transformative inventive concepts," which does not dispute the Def. PFF ¶ 323.

324. *In a declaration that was filed with the complaints, Oehr states that "the resulting molecular bromine will react with elemental mercury."*

D.I. # 35-3, Oehr Decl. (May 17, 2016) ¶ 7.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. Mr. Oehr's statements about the invention must be read as a whole. Undisputed that the partial quotation from Mr. Oehr is of text found in that declaration.

Def. Reply: Undisputed that the quoted text in Def. PFF ¶ 324 is a direct quote from Oehr's declaration.

325. *In a declaration that was filed with the complaints, Oehr states that the coal combustion flue gas must be "sufficiently hot to decompose the precursor to create molecular bromine."*

D.I. # 35-3, Oehr Decl. (May 17, 2016) ¶ 9.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. Mr. Oehr's statements about

the invention must be read as a whole. Undisputed that the partial quotation from Mr. Oehr is of text found in that declaration.

Def. Reply: Undisputed that the quoted text in Def. PFF ¶ 320 is a direct quote from Oehr's declaration.

326. *Oehr stated that the invention covered by the '692 Patent was the use of a "thermolabile molecular bromine precursor" as a source of molecular bromine, which would effect oxidation of elemental mercury.*

D.I. # 35-3, Oehr Decl. (May 17, 2016) ¶ 7; D.I. # 72, First Fry Report ¶ 114.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact as it mischaracterizes the documents, and is incomplete. Mr. Oehr's statements about the invention must be read as a whole, and include the '692 Patent, inclusive of the specification. In addition, his Declaration, which Defendants cite here, must also be read as a whole. Undisputed that the asserted claims of the '692 Patent, after reexamination, require use of a "thermolabile molecular bromine precursor," that in accordance with the parties' agreed upon construction it must, after injection into flue gas, directly or indirectly lead to the formation of molecular bromine, and that the thus formed molecular bromine must effect the oxidation of mercury in the flue gas. Furthermore, the proposed finding of fact is argumentative and a statement of Defendants' position on the legal construction of the claims. As is clear, it is the claims that define the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005).

Def. Reply: Undisputed. Def. PFF ¶ 326 is supported by the Oehr declaration as evidenced by comparing Def. PFF ¶ 326 with the Oehr declaration and Plaintiffs have not cited evidence that disputes that.

C. Molecular Bromine

327. *The parties agree that the decomposition of a thermolabile molecular bromine precursor leads to some molecular bromine (Br₂), and that, in so doing, the thermolabile molecular bromine precursor does not need to directly lead to Br₂, but can proceed to Br₂ though intermediate species. For example, decomposition of a thermolabile molecular bromine precursor may lead to HBr or atomic Br, some of which later forms Br₂.*

D.I. # 74, Third Fry Report ¶ 84; D.I. # 77, Third Wilcox Report ¶ 21.

Pl. Response: Undisputed, to the extent the statement refers to how the parties agreed to define the term "thermolabile molecular bromine precursor" as it is used in the patent claims.

Def. Reply: Undisputed.

328. *Plaintiffs' expert witness, Andrew Fry, opined that CaBr₂ injected in the experiments in Julien might not be a molecular bromine precursor because it might not form Br₂ in that system.*

D.I. # 73, Second Fry Report ¶¶ 194-95.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

329. *Plaintiffs' expert witness, Andrew Fry, opined that even if the CaBr₂ leads to Br₂ in Julien, that Br₂ might not lead to the oxidation of elemental mercury.*

D.I. # 73, Second Fry Report ¶ 203.

Pl. Response: Undisputed.

Def. Reply: Undisputed

330. *Plaintiffs' expert witness, Andrew Fry, opined that CaBr₂ might not be a thermolabile molecular bromine precursor:*

"It does not necessarily follow, however, that any injection of CaBr₂ under any conditions in any coal combustion system constitutes injection of a thermolabile molecular bromine precursor."

D.I. # 73, Second Fry Report ¶¶ 194-95.

Pl. Response: Disputed. The proposed finding of fact is vague in its use of the phrase "might not" because it does not identify the context in which the cited opinion from Dr. Fry was offered. For example, Dr. Fry has opined [REDACTED]

[REDACTED] but has opined that CaBr₂ might not be a thermolabile molecular bromine precursor in the system described in Julien, for example, because not enough is known about the system in Julien to form that conclusion. Dkt. 73, Second Fry Report at ¶¶ 194, 200. Without specifying the context, this proposed finding of fact is unclear and Plaintiffs dispute it on that basis.

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion, and the cited materials do not contradict the stated fact.

331. *When discussing prior art references, Plaintiffs' expert witness, Andrew Fry, opined that testing is required to know whether molecular bromine is generated.*

D.I. # 73, Second Fry Report ¶¶ 226, 247.

Pl. Response: Disputed. This proposed finding of fact mischaracterizes Dr. Fry's opinions. The referenced paragraphs from Dr. Fry's report refer to two prior art references which do not disclose enough about the combustion systems used for one to determine whether molecular bromine was formed in those systems. Dkt. 73, Second Fry Report ¶¶ 226, 247. Therefore, in such a case, Dr. Fry opined that one cannot know from the disclosures of the references whether molecular bromine was formed in the absence of testing. Dkt. 73, Second Fry Report ¶¶ 226, 247 [REDACTED]

PFF ¶¶ 1126, 1145, 1195 - 1198.

Dkt. 103, PFF ¶¶ 152, 1146.

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion and it adds additional facts, but the cited materials do not contradict the stated fact. Plaintiffs do not dispute Def. PFF ¶ 331 that when Fry was discussing the prior art he opined that testing is required to know whether molecular bromine is generated.

332. *It is the opinion of Plaintiffs' expert witness, Andrew Fry, that there are at least ten factors that affect whether Br₂ is formed from a particular bromide compound, including CaBr₂, in a particular combustion system:*

"Numerous factors can affect whether Br₂ is generated from HBr or from CaBr₂, including the temperature profile of the system, residence time, ash composition and unburned carbon in ash, coal type, other flue gas constituents, pressure, water vapor, composition of the system walls, size and orientation of various aspects of the combustion facility, etc."

D.I. # 73, Second Fry Report ¶ 206; D.I. # 73, Second Fry Report ¶¶ 226, 247.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

333. *It is the opinion of Plaintiffs' expert witness, Andrew Fry, that there are at least eleven factors that affect whether Br₂ in a particular combustion system will effect oxidation of Hg⁰:*

"Similar to the question of whether molecular bromine was formed, numerous factors can affect whether Hg⁰ is oxidized by Br₂ (assuming any Br₂ were present) to form HgBr₂, including the temperature profile of the system, residence time, ash composition and unburned carbon in ash, coal type, other flue gas constituents, pressure, presence of acid gases, water vapor, composition of the system walls, size and orientation of various aspects of the combustion facility, etc."

D.I. # 73, Second Fry Report ¶ 250; D.I. # 73, Second Fry Report ¶¶ 205, 233.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

334. *Consideration or modeling of the at-least ten factors identified by Plaintiffs' expert witness, Andrew Fry, to determine if a bromide compound decomposes into Br₂ and effects the oxidation of mercury would require undue experimentation.*

D.I. # 73, Second Fry Report ¶¶ 206, 250; D.I. # 77, Third Wilcox Report ¶¶ 6-7.

Pl. Response: Disputed. As Dr. Fry testified, in the case of large-scale utility power plants as referred to in the patent specification, and those used by Defendants, enough can be known about the various parameters to be confident that molecular bromine will form. PFF ¶¶ 1126, 1145, 1195 - 1198. [REDACTED]

[REDACTED] Dkt. 103, PFF ¶¶ 152, 1146.

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion, and the cited materials do not contradict the stated fact. The evidence cited by Plaintiffs (PFF ¶¶ 1126, 1145, 1195–1198) at most suggests that some of the factors identified by Fry to determine if a bromide compound decomposes into Br₂ and effects the oxidation of mercury would not require experimentation in a large-scale utility power plant, but that is not true of all of the factors. Fry's testimony relies on the Niksa paper, which would not have been known to a POSA at the time of the patent, and which therefore would not be a proper substitute for required experimentation. *See* D.I. # 71, Fry Dep. 142:9–145:7 (explaining that he “relied heavily” on the Niksa article).

Dkt. 103, PFF ¶ 152 is merely a recitation of one of Defendants' proposed constructions. To the extent Plaintiffs meant to refer to PFF ¶ 153, this quote does not support Plaintiffs' argument. Dkt. 134, Def. Resp. to Pl. PFF ¶ 153. Dkt. 103, PFF ¶ 1146 does not exist. To the extent that Plaintiffs meant Dkt. 133, ¶ 1146, this quote does not support Plaintiffs' argument. *See* Def. Resp. to Pl. PFF ¶ 1146.

335. *In his opening infringement reports, Plaintiffs' expert witness, Andrew Fry, cited only to Chem-Mod presentations that were not specific to the accused plants for his opinion that “Calcium bromide (CaBr₂) is a bromide compound that is a thermolabile molecular bromine precursor to effect oxidation of elemental mercury to a mercuric bromide that is ‘effective for all coal types.’”*

D.I. # 72, First Fry Report ¶ 159; Mark Decl. Ex. 188, “Advances in Refined Coal for Emissions Reduction, Power Plant Pollutant Control, ‘MEGA’ Symposium” (Aug. 19-22, 2014), at CHEM_MOD_00000042; Mark Decl. Ex. 187, “How Installed Plant Equipment and Emission Limits Guide Mercury Removal Technology Choices, 2015 Power-Gen Europe” (June 9-11, 2015), at CHEM_MOD_00000857.

Pl. Response: Disputed. [REDACTED]

[REDACTED] Dkt. 72, First Fry Report ¶ 159. *See also* Dkt. 74, ¶ 75; *see generally*, Dkt. 90-175, (Exhibit 188), “Advances in Refined Coal for Emissions

Reduction, Power Plant Pollutant Control, ‘MEGA’ Symposium” (Aug. 19-22, 2014), Mark Decl. Ex. 187, “How Installed Plant Equipment and Emission Limits Guide Mercury Removal Technology Choices, 2015 Power-Gen Europe” (June 9-11, 2015).

Def. Reply: Undisputed. Def. PFF ¶ 335 correctly states that the Chem-Mod presentations were not specific to the accused plants and Plaintiffs have not cited evidence that disputes the stated fact. Plaintiffs cite the First Fry Report ¶ 159 which states, “Calcium bromide (CaBr₂) is a bromide compound that is a thermolabile molecular bromine precursor to effect oxidation of elemental mercury to a mercuric bromide that is ‘effective for all coal types.’ CHEM-MOD_00000038-55 at 42; CHEM-MOD 00000854-70 at 857” which does not support Plaintiffs’ contention. The additional references cited by Plaintiffs in their response also do not specifically address the plants at issue in these cases.

336. *In his opening infringement reports, Plaintiffs’ expert witness, Andrew Fry, opined that “[c]alcium bromide (CaBr₂) is a bromide compound that is a thermolabile molecular bromine precursor to effect oxidation of elemental mercury to a mercuric bromide that is ‘effective for all coal types,’” but not discuss any of the factors that he identified in his second report as relevant to this determination.*

D.I. # 72, First Fry Report ¶ 159; D.I. # 73, Second Fry Report ¶¶ 206, 250.

Pl. Response: Undisputed, though irrelevant.

Def. Reply: Undisputed.

337. *At his deposition, Plaintiffs’ expert witness, Andrew Fry, claimed that he had considered the various factors that he had opined as necessary to reach his initial conclusion that calcium bromide is a thermolabile molecular bromine precursor to effect oxidation of elemental mercury to a mercuric bromide, but only pointed to the systems modeled in that Niksa as paper being “similar enough” to the accused plants.*

D.I. # 71, Fry Dep. 142:9–144:5 (explaining that he “relied heavily” on the Niksa article).

Pl. Response: Disputed. This proposed finding of fact is vague and unclear. It is not clear what is meant by “but only pointed to the systems modeled in that Niksa as paper being ‘similar enough’ to the accused plants” or what that clause is intended to mean within the context of the proposed finding of fact. Plaintiffs dispute that Dr. Fry testified that the basis for his opinion that calcium bromide used in the accused systems is a thermolabile molecular bromine precursor was the Niksa paper. As he explained at his deposition, Dr. Fry was very familiar with the work of Niksa years before he formed his opinions in the present case, and Dr. Fry’s pre-existing (before this lawsuit) understanding of the expected behavior of calcium bromide in commercial power plants was based on a variety of things, including his own modeling work and the work of Niksa. PFF ¶¶ 1152-1153. Dr. Fry used that general understanding that he has as an expert in forming his

opinions. PFF ¶¶ 1152-1153. The testimony cited by Defendants is in response to a question about Dr. Fry's consideration of various factors at the accused plants. But Dr. Fry has made clear that in forming his opinions on infringement,

See, e.g., Dkt. 72, Fry Opening report ¶ 159.

Def. Reply: Undisputed. Def. PFF ¶ 337 is supported by the record as evidenced by comparing Def. PFF ¶ 337 to the Fry deposition. The response asserts additional facts, but it raises no dispute of the proposed fact, which explains what Fry said at his deposition.

338. *The Niksa reference “describes a detailed reaction mechanism for Br/Hg/Cl chemistry in coal-derived flue gas.”*

Mark Decl. Ex. 157, Stephen Niksa, Process Chemistry of Br Addition to Utility Flue Gas for Hg Emissions Control, 24 ENERGY & FUELS 1020 (2010) (“Niksa”), Abstract.

Pl. Response: Disputed. As phrased, this proposed finding of fact suggests that Niksa describes that the reaction mechanisms are representative of any coal-derived flue gas, but in reality, Niksa makes clear that the reaction mechanisms discussed are in the specific context of coal-fired utility power plants. For example, the complete sentence that Defendants quote from in this proposed finding of fact reads: “This paper describes a detailed reaction mechanism for Br/Hg/Cl chemistry in coal-derived flue gas and interprets the Hg oxidation performance across a broad range of Br addition rates in recent field tests at plants Miller, Milton R. Young, and Monticello that burn low-rank coals.” Mark Decl. Ex. 157, Stephen Niksa, *Process Chemistry of Br Addition to Utility Flue Gas for Hg Emissions Control*, 24 ENERGY & FUELS 1020 (2010) (“Niksa”), Abstract. The Niksa paper also states: “This paper brings our earlier mechanisms for Br/Hg/Cl chemistry in flue gas^{10, 11} into final form and demonstrates the predictive capabilities in interpretations of the Hg oxidation performance across a broad range of Br addition rates in recent field tests at plants Miller, Milton R. Young, and Monticello. Primary goals of this study are to identify the major differences between the Hg transformation chemistries with Br and Cl and to illustrate how these differences affect Hg removals in full-scale utility gas-cleaning systems.” Mark Decl. Ex. 157, Stephen Niksa, *Process Chemistry of Br Addition to Utility Flue Gas for Hg Emissions Control*, 24 ENERGY & FUELS 1020 (2010) (“Niksa”), p. 1021 (emphasis added).

Def. Reply: Undisputed that the *Niksa* reference states “[t]his paper describes a detailed reaction mechanism for Br/Hg/Cl chemistry in coal-derived flue gas and interprets the Hg oxidation performance across a broad range of Br addition rates in recent field tests at plants Miller, Milton R. Young, and Monticello that burn low-rank coals.” Mark Decl. Ex. 157, Stephen Niksa, *Process Chemistry of Br Addition to Utility Flue Gas for Hg Emissions Control*, 24 ENERGY & FUELS 1020 (2010) (“Niksa”), Abstract.

339. *The Niksa reference was published in 2010.*

Mark Decl. Ex. 157, Niksa at 1020.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

340. *Plaintiffs' expert witness, Andrew Fry, did not cite to the Niksa reference in the text of his initial infringement reports.*

D.I. # 72, First Fry Report.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

341. *At his deposition, Plaintiffs' expert witness, Andrew Fry, corrected a typographical error in paragraph 84 of his third report, which discusses the Niksa reference. Fry stated that for the phrase "Br₂ begins to form at temperatures of about 900 to 950 °C," the correct temperature range should be "800 to 850 °C."*

D.I. # 71, Fry Dep. 65:11–25.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

342. *The claims of the '692 Patent are directed to the natural phenomenon that is the oxidation of mercury to mercury bromide through a chemical pathway that includes molecular bromine (Br₂).*

D.I. # 35–1, '692 Patent at Abstract; Claims 1 and 19; D.I. # 35–3, Oehr Decl. (May 17, 2016) ¶ 7.

Pl. Response: Disputed. This proposed finding of fact is not a fact but rather a legal conclusion that is the subject of Defendants' motion for summary judgment and has been briefed by the parties. As explained in Plaintiffs' response to Defendants' Motion for Summary Judgment, it simply incorrect. The claims of the '692 Patent are not "directed to the natural phenomenon that is the oxidation of mercury to mercury bromide through a chemical pathway that includes molecular bromine (Br₂)."

Instead, they recite a specific process for treating coal combustion flue gas to remove mercury, which involves concrete steps to apply an underlying principle and improves upon prior art methods. Consistent with the claims, the '692 Patent's specification also describes the invention as a method for treating flue gas, not as a method for generating molecular bromine or for oxidizing mercury. Dkt. 35-1, '692 Patent, 3:66-67, 3:55-58. Defendants themselves admit the claims are not "directed to the natural phenomenon that is the oxidation of mercury to mercury bromide through a chemical pathway that includes molecular bromine (Br₂)."

They state, for example, that "Oehr's '692 Patent, the patent in suit, is directed to a method for treating 'coal combustion flue gas' in coal-fired power plants." Dkt. 103, PFF ¶14. Defendants also state: "Independent claim 1 of the '692 Patent is directed to a method for treating 'coal combustion flue gas' by 'injecting' a thermolabile molecular bromine precursor 'into said flue gas.'" Dkt. 108 at 41. In another example, they state: "Likewise,

independent claim 19 of the '692 Patent is directed to a method of treating "flue gas . . . produced during the combustion of coal." *Id.* Defendants' brief also states: "The claimed invention is directed to the treatment of flue gas by "injecting a thermolabile molecular bromine precursor into said flue gas." Dkt. 103, PFF ¶ 52. Although Defendants' characterizations still oversimplify the claims, their own "directed to" conclusions appear to concede that the invention is an application of any underlying law or of nature or natural phenomenon, not the law itself. This proposed finding of fact is not a fact but rather just Defendants' position and reflects an incorrect legal conclusion and is Pl. Response: Disputed. *See* Plaintiffs' Opposition to Defendants' Motion for Summary Judgment, Section V (A).

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion. Furthermore, for the reasons set forth in D.I. # 107, Def. Op. Br. § V.A., the claims of the '692 Patent are drawn to "laws of nature" and "natural phenomena," with no added inventive concept. Plaintiffs' assertion that the claims of the '692 Patent are directed at more than a natural phenomenon is unsupported and incorrect.

343. *Plaintiffs' expert witness, Andrew Fry, testified that oxidation of mercury by bromine proceed through a variety of pathways, some of which involve Br₂ and some of which do not.*

D.I. # 71, Fry Dep. 45:20–47:15.

Pl. Response: Disputed. This proposed finding of fact mischaracterizes the testimony of Dr. Fry. The testimony was [REDACTED]

[REDACTED] Dkt. 71, Fry Dep. 45:20–47:15. Because the proposed finding of fact does not reflect that, it is misleading as to the suggested breadth of Dr. Fry's testimony, and is disputed on that basis.

Def. Reply: Undisputed that "Plaintiffs' expert witness, Andrew Fry, testified that oxidation of mercury by bromine proceeds through a variety of pathways, some of which involve Br₂ and some of which do not" [REDACTED]

344. *There is no discussion in the '692 Patent of how to determine whether Br₂ is present in any region of a coal-burning power plant.*

D.I. # 35-1, '692 Patent.

Pl. Response: Disputed. The '692 Patent makes it clear that in the context of coal-fired utility power plants, in other words, commercial scale coal-fired power plants, that molecular bromine will form from the injection of calcium bromide into flue gas. [REDACTED]

[REDACTED] Dkt. 103, PFF ¶¶ 152, 1146.

Def. Reply: Undisputed. Def. PFF ¶ 344 is supported by the record as evidenced by comparing Def. PFF ¶ 344 to the '692 Patent. Plaintiffs'

response fails to identify any discussion in the '692 Patent of how to determine whether Br₂ is present in any region of a coal-burning power plant. Dkt. 103, PFF ¶ 152 is merely a recitation of one of Defendants' proposed constructions. To the extent Plaintiffs meant to refer to PFF ¶ 153, this quote does not support Plaintiffs' argument. Dkt. 134, Def. Resp. to Pl. PFF ¶ 153. Dkt. 103, PFF ¶ 1146 does not exist. To the extent that Plaintiffs meant Dkt. 133, ¶ 1146, this quote does not support Plaintiffs' argument. *See* Def. Resp. to Pl. PFF ¶ 1146.

Furthermore, the claims of the '692 Patent are not limited to coal-fired power plants and Plaintiffs have not advanced a claim construction that would limit the claims in that way. *See, e.g.*, D.I. # 35-1, '692 Patent, Claims 1, 19; *see also* D.I. # 82, Amended Joint Table of Terms Requiring Construction, at 2. And the data relied on by the patent for the behavior of thermolabile molecular bromine precursors is not tied to coal-fired power plants. *See* D.I. # 35-1, '692 Patent, 4:66–5:28 (including Table 2), 6:16–7:22 (including Table 3). Nor is the prior art relied on by the patent applicant limited to coal-fired power plants. *See, e.g., id.* 2:26–37 (citing Galbreath); *id.* 5:38–6:46 (discussing Senior).

Even within the field of coal-fired power plants, Dr. Fry testified that there are at least five different types of coal-fired power plants, D.I. # 71, Fry Dep. 72:2–22, and that, in the context of the factors controlling the behavior of bromide compounds, circulating fluidized bed and cyclone boilers are different than tangentially-fired and wall-fired boilers. *Id.* 151:10–152:18; 156:5–157:4; 158:13–159:20; 186:15–25.

345. *There is nothing in the specification or claims of '692 Patent that directs a POSA how to select a particular bromine compound for a particular combustion system so that the oxidation of mercury that takes place actually proceeds through Br₂.*

D.I. # 73, Second Fry Report ¶¶ 194, 200; D.I. # 71, Fry Dep. 11:22–14:4 (testifying that a POSA whether CaBr₂, MgBr₂ or NH₄Br would be a thermolabile molecular bromine precursor depends on the ten factors listed in his report).

Pl. Response: Disputed. The written description of the '692 Patent teaches that when injected into coal combustion flue gas in a coal-fired power plant at a location such as the example given in the patent, where the temperature is hot enough to bring about the decomposition of the bromide compound, some molecular bromine will result, which will oxidize mercury. *See, e.g.*, Plaintiffs' PFF ¶ 1165, 1188-1194. The cited testimony from Dr. Fry on which Defendants rely to support this proposed finding of fact is in response to a very general question ("Okay. Is calcium bromide a thermolabile molecular bromine precursor?" Dkt. 71, Fry Dep. 11:22-23) and not directed to a specific context or application of the use of calcium bromide. In response, Dr. Fry explained that the answer depends on various things ("Again, I think that's an incomplete question. It depends on many things." Dkt. 71, Fry Dep. 11:24-25). It does not have reference anything about what the '692 Patent does or does not teach.

Def. Reply: Undisputed. Def. PFF ¶ 345 is supported by the record as evidenced by comparing Def. PFF ¶ 345 to the '692 Patent. Plaintiffs evidence does not support that '692 Patent teaching are limited to coal-

fired power plants, or that they teach particular conditions that would allow to direct a POSA to select a particular bromine compound for a particular combustion system so that the oxidation of mercury that takes place actually proceeds through Br₂.

346. *Plaintiffs' expert witness, Andrew Fry, opined that whether calcium bromide is a thermolabile molecular bromine precursor depends on many things, including all the factors he indicated in his report. He opined that the same was true of magnesium bromide.*

D.I. # 71, Fry Dep. 11:22–12:15, 13:7–11.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

347. *There is nothing in the specification or claims of the '692 Patent regarding any way to measure, observe or model whether the use of a particular bromide compound in a coal-burning power plant resulted in the oxidation of mercury through a reaction that involved Br₂.*

D.I. # 35-1, '692 Patent.

Pl. Response: Disputed. The '692 Patent makes it clear that in the context of coal-fired utility power plants, in other words, commercial scale coal-fired power plants, that molecular bromine will form from the injection of calcium bromide into flue gas.

Def. Reply: Undisputed. Def. PFF ¶ 347 is supported by the record as evidenced by comparing Def. PFF ¶ 347 to the '692 Patent. Plaintiffs cite no evidence to dispute this proposed finding of fact.

348. *Dependent claims in the '692 Patent require that the coal being burnt is either subbituminous coal or lignite coal.*

D.I. # 35-1, '692 Patent, Claims 9, 23.

Pl. Response: Disputed in part, as vague as to “other claims.” **Undisputed** to the extent that Claims 9 and 23 do refer to subbituminous coal or lignite coal.

Def. Reply: Undisputed.

349. *Plaintiffs' expert witness, Andrew Fry, opined that even the bromide compound specifically identified as a thermolabile molecular bromine precursor by Oehr in the '692 Patent may or may not form molecular halogens when injected into a combustion system.*

D.I. #71, Fry Dep. 11:22–14:2 (testifying that whether MgBr₂ would be a thermolabile molecular bromine precursor depends on ten factors); D.I. # 35-1, '692 Patent at 4:63-65.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

D. Oxidation of Mercury

350. *The '692 Patent does not claim to have invented the oxidation of mercury with halides generally.*

D.I. # 35-1, '692 Patent at 1:29-35, 1:49-54; 1:64-2:4; 2:58-61.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

351. *The '692 Patent does not claim to have been the first to recognize that oxidized forms of mercury, such as mercuric halides, are readily soluble and thus easily removed.*

D.I. # 35-1, '692 Patent at 1:29-46, 2:8-13; 2:16-22.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

E. Andrew Fry's Factors for Determining Whether a Bromide Compound Is a Thermolabile Molecular Bromine Precursor

352. *Nothing in the specification or claims of the '692 Patent directs a POSA on how to select a particular bromide compound for a particular combustion system to produce the specific reaction pathway required by that patent—i.e., oxidation of Hg^0 to Hg^{2+} through the involvement of molecular bromine.*

D.I. # 73, Second Fry Report at ¶¶ 194, 200; D.I. # 71, Fry Dep. 11:22-14:2 (testifying that even whether $CaBr_2$, $MgBr_2$ or NH_4Br would be a thermolabile molecular bromine precursor depends on the ten factors listed in his report).

Pl. Response: Disputed. The patent's specification describes injecting a "thermolabile molecular bromine precursor" into flue gas in a power plant. See e.g. PFF ¶ 1188. It provides examples of thermolabile molecular bromine precursors, such as magnesium bromine and calcium bromide. PFF ¶¶ 1189-1190. It describes a non-limiting example of where in a power plant the thermolabile molecular bromine precursor can be injected into flue gas. PFF ¶ 1165. It gives the thermal decomposition temperature of an example of a thermolabile molecular bromine precursor. PFF ¶ 1191. It also identifies temperature ranges where formation of mercuric bromide from elemental mercury and molecular bromine is particularly favored, and further teaches that those temperatures are typical of coal combustor flue gas, particularly in certain regions of a power plant. PFF ¶¶ 1192-1194. And as Defendants admit, the Patent Office specifically recognized during the reexamination that the patent's specification

provided adequate written description for the thermolabile molecular bromine precursor of the claims. *See* Dkt. 103, PFF ¶ 110.

Def. Reply: Undisputed. The response asserts additional facts, but they raise no dispute of the proposed fact. Further, Plaintiffs' statement is argumentative and states a legal conclusion, and the cited materials do not dispute the stated fact. Plaintiffs' cited evidence raises no dispute that the '692 Patent does not discuss how to select a *particular* bromide compound, but rather lists the patent's discussion of factors affecting the behavior of thermolabile molecular bromine precursors generally.

353. *Plaintiffs' expert witness, Andrew Fry, testified that even the whether CaBr₂, MgBr₂ or NH₄Br would be a thermolabile molecular bromine precursor depends on at least ten different factors.*

D.I. # 73, Second Fry Report ¶¶ 206, 226, 247; D.I. # 71, Fry Dep. 11:22–14:2.

Pl. Response: Disputed. The finding is grammatically nonsensical. To the extent the proposed finding is that Dr. Fry opined that whether the cited compounds would be a thermolabile molecular bromine precursor could depend upon at least ten factors identified by Dr. Fry, Plaintiffs do not dispute that, with the qualifier that Dr. Fry also testified that enough can be known about these factors in connection with a large-scale utility coal-fired boiler such as used by Defendants that it can be said with confidence that molecular bromine is formed from the precursor. [REDACTED] PFF ¶¶ 1126, 1145, 1195 – 1198

Def. Reply: Undisputed. Plaintiffs assert an additional fact, but it raises no dispute of the proposed fact. The word “the,” appearing between “even” and “whether” in this PFF, should be struck as a typographical error, and Plaintiffs appear to recognize that.

Plaintiffs cite no evidence that the information about large-scale utility coal-fired boilers proffered by Fry would have been available to a POSA at the time of the patent, and Plaintiffs do not identify the experimentation that a POSA would need to undertake in the absence of that information. Nor does the patent identify any such analysis or explain how to perform it.

Furthermore, neither the PFF nor the claims of the '692 Patent are limited to coal-fired power plants, and Plaintiffs have not advanced a claim construction that would limit the claims in that way. *See, e.g.,* D.I. # 35-1, '692 Patent, Claims 1, 19; *see also* D.I. # 82, Amended Joint Table of Terms Requiring Construction, at 2. And the data relied on by the patent for the behavior of thermolabile molecular bromine precursors is not tied to coal-fired power plants. *See* D.I. # 35-1, '692 Patent, 4:66–5:28 (including Table 2), 6:16–7:22 (including Table 3). Nor is the prior art relied on by the patent applicant limited to coal-fired power plants. *See, e.g., id.* 2:26–37 (citing Galbreath); *id.* 5:38–6:46 (discussing Senior).

Even within the field of coal-fired power plants, Dr. Fry testified that there are at least five different types of coal-fired power plants, D.I. # 71, Fry Dep. 72:2–22, and that, in the context of the factors controlling the

behavior of bromide compounds, circulating fluidized bed and cyclone boilers are different than tangentially-fired and wall-fired boilers. *Id.* 151:10–152:18; 156:5–157:4; 158:13–159:20; 186:15–25.

354. *At his deposition, in response to questions directed to how he considered his list of ten factors in opining that the CaBr₂ used to pretreat coal at the accused plants generates molecular bromine upon combustion, Plaintiffs’ expert witness, Andrew Fry, claimed that he “relied heavily on the Niksa article for this evaluation.”*

D.I. # 71, Fry Dep. 142:9–143:4.

Pl. Response: Disputed. This proposed finding of fact mischaracterizes Dr. Fry’s testimony. As he explained at his deposition, Dr. Fry was very familiar with the work of Niksa years before he formed his opinions in the present case, and Dr. Fry’s pre-existing (before this lawsuit) understanding of the expected behavior of calcium bromide in commercial power plants was based on a variety of things, including his own modeling work and the work of Niksa. PFF ¶¶ 1152–1153. Dr. Fry used that general understanding that he has as an expert in forming his opinions. PFF ¶¶ 1152–1153. The testimony cited by Defendants is in response to a question about Dr. Fry’s consideration of various factors at the accused plants. Dr. Fry has made clear that in forming his opinions on infringement, he also relied on Chem-Mod documents which confirm that calcium bromide is a thermolabile molecular bromine precursor in plants such as those accused of infringement in this case. See, e.g., Dkt. 72, Fry Opening report ¶ 159.

Def. Reply: Undisputed. Plaintiffs’ response is argumentative and states a legal conclusion, and the cited materials raise no dispute of the stated fact. Def. PFF ¶ 354 explains the context in which Dr. Fry testified that he “relied heavily in the Niksa reference.”

355. *Under the Plaintiffs’ proposed constructions, there is nothing in the claims that directs where, how, or when a bromide compound should be added to the coal combustion system, beyond that it needs to be hot enough to dissociate the bromide compound.*

D.I. # 35-3, Oehr Decl. (May 17, 2016) ¶ 7.

Pl. Response: Disputed. The claims include the step of “injecting” a thermolabile molecular bromine precursor “into ... flue gas.” A POSA would understand the scope of the claims in light of what is taught by the specification and understand where, how and when the bromide compound should be added to the system in order to achieve the claim elements. See, e.g. Plaintiffs’ PFF ¶¶ 1765, 1765, 1792–1794. Beyond the need for sufficient temperatures for the bromide compound to decompose, for example, as taught by the specification, the claims themselves make clear that the injection of the bromide compounds cannot occur further downstream than the particular collection device. Dkt. 35-1, ’692 Patent, Reexamination certificate, claims 1 and 19.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion. Plaintiffs’ response is contradicted by the patent owner’s testimony cited in Def. PFF ¶ 355, which reads as follows: “My

invention was not about introducing a thermolabile molecular bromine precursor into any particular location in the coal-fired furnace or elements downstream of the furnace . . . the point of injection could be anywhere in coal combustion flue gas sufficiently hot to decompose the precursor, so that the resulting molecular bromine will react with elemental mercury in the coal combustion flue gas.” D.I. # 35-3, Oehr Decl ¶ 7.

356. *In his report, Plaintiffs’ expert witness, Andrew Fry, proposed three particular elements as providing the required additional inventive concepts to render patentable a claim directed to the natural phenomenon of burning bromine- and mercury-containing coal.*

D.I. # 73, Second Fry Report ¶¶ 177, 179, and 180.

Pl. Response: Disputed. This proposed finding of fact mischaracterizes Dr. Fry’s opinions and suggests by its wording that the claims of the ’692 Patent are directed to a “natural phenomenon,” which is argument, and an incorrect conclusion of law, and does not belong in a proposed finding of fact. Dr. Fry opined that the claims of the ’692 Patent are not directed to a law of nature or “natural phenomenon” to begin with. Dkt. 73, Second Fry Report, ¶ 169-174. Therefore, the claims need no further “inventive concept” to make them patent eligible under 35 U.S.C. § 101. Nonetheless, Dr. Fry identified additional inventive concepts in the dependent claims which are reflected in the paragraphs cited by Defendants in support of the proposed finding of fact. Those paragraphs in no way suggest, however, that Dr. Fry is of the opinion that those additional inventive concepts are necessary to render the claims patent eligible, because as explains, the claims are not directed to unpatentable subject matter to begin with. Dkt. 73, Second Fry Report, ¶ 169-174.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion. Furthermore, for the reasons set forth in D.I. # 107, Def. Op. Br. § V.A., that the claims of the ’692 Patent are drawn to “laws of nature” and “natural phenomena,” with no added inventive concept. Plaintiffs’ assertion that the claims of the ’692 Patent are directed at more than a natural phenomenon is unsupported and incorrect.

357. *Plaintiffs’ expert witness, Andrew Fry, admitted during his deposition that each of the three particular elements (using a FGD system containing a liquid; using alkaline coal fly ash particles as the solid particles in Claim 1 of the ’692 Patent; using alkaline solid particles derived from the fusion of coal ash with alkali and an alkali flux) identified in his Second Report at paragraphs 177, 179, and 180 were known at the time the ’692 Patent was filed.*

D.I. # 71, Fry Dep. 241:3–242:21; D.I. # 73, Second Fry Report ¶¶ 177, 179, and 180.

Pl. Response: Disputed. To the contrary, Dr. Fry has made it clear that the combination of these three cited “elements” as referred to in respective dependent claims of the ’692 Patent, represent inventive combinations. Dkt. 73, Fry second Report, ¶¶ 177, 179 and 180.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact. Plaintiffs' response does not dispute that, in his deposition, Fry testified that 1) the use of fusion in fly ash with alkali and alkali flux was taught in the Oehr '235 Patent; 2) the technology involving a flue gas desulphurization system containing a liquid was known before 2001 in connection with coal-burning power plants, and 3) alkaline coal fly ash particles can come from coal itself. D.I. # 71, Fry Dep. 241:3–242:21.

F. Bromine Speciation

358. *The Niksa model of bromine specification teaches which bromine compounds and other species (such as bromine atoms) appear at different temperatures.*

D.I. # 75, First Wilcox Report ¶ 110; D.I. # 74, Third Fry Report ¶ 84; Mark Decl. Ex. 157, Niksa at 1023.

Pl. Response: Disputed. The proposed finding of fact is vague and ambiguous in its use of the phrase “appear at different temperature.” As phrased, it is unclear if the proposed finding of fact is that the bromine compounds appear at different temperatures from each other, appear exclusively at different temperatures, or that the “bromine compounds” appear at different temperatures than the “other species,” or has some other meaning. For this reason, Plaintiffs cannot confirm whether this proposed fact is disputed or undisputed, and therefore dispute the proposed finding of fact. Furthermore, what the Niksa article teaches is best described by the Niksa article itself, and the testimony of its author. *See* Dkt. 90-159; Dkt. 70-1; '280 Case, Dkt. 75 (Motion seeking leave) (Note, that even if this Motion were denied, Plaintiffs have confirmed that they will bring Dr. Niksa to trial as a fact witness who will testify at the facts sufficient to support the points made here).

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact, and Plaintiffs have cited no evidence that raises a dispute of the stated fact. The PFF contains a typographical error that Plaintiffs appear to have disregarded—the word “specification” should be the word “speciation.”

359. *Niksa teaches that molecular bromine, Br₂, begins to form at temperatures around 800-850 °C, and that production of molecular bromine increases with decreasing temperature.*

D.I. # 75, First Wilcox Report ¶ 110; D.I. # 74, Third Fry Report ¶ 84; D.I. # 71, Fry Dep. 65:11-25.

Pl. Response: Disputed. The proposed finding of fact is phrased so broadly as to state more than what Niksa teaches and imply facts not supported by the evidence cited. For example, Niksa only teaches that molecular bromine, Br₂, begins to form at temperatures around 800-850 °C in the conditions of a commercial utility coal-fired power plant, not under all conditions. *See* generally, Dkt. 90-159, Niksa. Niksa also does not teach that molecular bromine production increases with decreasing temperature without a limit. Niksa teaches that the molecular bromine concentration plateaus around 160. Dkt. 73, Second Fry Report, ¶ 126. *See* Dkt. 90-159; Dkt. 70-1; '280 Case, Dkt. 75 (Motion seeking leave) (Note, that even if this Motion were denied, Plaintiffs have confirmed that

they will bring Dr. Niksa to trial as a fact witness who will testify at the facts sufficient to support the points made here).

Def. Reply: Undisputed. Plaintiffs have asserted additional facts, but they raise no dispute of the stated fact. Def. PFF ¶ 359 does not state that Niksa “teaches that molecular bromine production increases with decreasing temperature without a limit.” Further, Plaintiffs’ assertion that Niksa’s teaching is limited to “the conditions of a commercial utility coal-fired power plant” is irrelevant and raises no dispute of the stated fact.

360. *Plaintiffs’ expert witness, Andrew Fry, opined that the Niksa reference could not be used to predict bromine speciation or to conclude that molecular bromine is necessarily generated.*

D.I. # 73, Second Fry Report ¶ 274.

Pl. Response: Disputed. The proposed finding of fact mischaracterizes Dr. Fry’s opinion by leaving out the context of the opinion and dimpling the opinion was broader than it was. Dr. Fry stated “no information was presented about validation of bromine speciation. Therefore, we cannot conclude that Niksa’s model correctly predicts bromine speciation. One cannot conclude based on the Niksa article that molecular bromine is necessarily generated, which is the standard that Dr. Wilcox must meet.” Dkt. 73, Second Fry Report ¶ 274. This statement refers to Dr. Wilcox’s unsupported opinion that molecular bromine forms in a particular prior art reference (Vassilev). *Id.* See Dkt. 90-159; Dkt. 70-1; ‘280 Case, Dkt. 75 (Motion seeking leave) (Note, that even if this Motion were denied, Plaintiffs have confirmed that they will bring Dr. Niksa to trial as a fact witness who will testify at the facts sufficient to support the points made here).

Def. Reply: Undisputed. Plaintiffs have asserted additional facts, but they raise no dispute of the stated fact. Def. PFF ¶ 360 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 360 to the Second Fry Report. Moreover, Plaintiffs rely on inadmissible, untimely disclosed expert testimony that is the subject of a pending motion to strike.

361. *In his third report, Plaintiffs’ expert witness, Andrew Fry, relies on Niksa to conclude that molecular bromine is generated in the accused power plants.*

D.I. # 74, Third Fry Report ¶ 84.

Pl. Response: Disputed. This proposed finding of fact mischaracterizes Dr. Fry’s statement. Dr. Fry has never stated that Niksa is proof that molecular bromine necessarily forms in Defendants’ systems. In addition to the infringement analysis contained in Dr. Fry’s First Report, Dkt. 72, Dr. Fry explains again the basis for his opinions that calcium bromide is a thermolabile molecular bromine precursor in Defendants’ systems. Dkt. 74, ¶ 83. He then goes on to state in paragraph 84 that Niksa “further supports this position.” Dkt. 74, ¶¶ 83-84. These statements do indicate that Dr. Fry “relied on” Niksa to form his conclusion as to Defendants’ systems, but rather only that it supports the conclusion he formed based on his understanding of how the systems work and the document produced by Chem-Mod. Dkt. 74, Third Fry Report ¶¶ 83-84.

Def. Reply: Undisputed. Plaintiffs assert additional facts, but they do not raise a dispute of the stated fact. Def. PFF ¶ 361 does not suggest that Fry relied solely on Niksa to support his position. Further, Plaintiffs' response states that Dr. Fry's statements "do indicate" that Fry "relied on" Niksa, which does not dispute the stated fact.

G. POSAs and "Thermolabile Molecular Bromine Precursors"

362. *A POSA reading the '692 Patent would understand that a "thermolabile molecular bromine precursor" is a substance that must generate molecular bromine (Br₂) when heated, and that such molecular bromine must react with the elemental mercury in the flue gas.*

D.I. # 75, Second Wilcox Report ¶ 76.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

363. *During the prosecution of the '692 patent, which was originally directed to the broader class of thermolabile molecular halogen precursors, the patent owner used molecular chlorine (Cl₂) as an exemplar of a "molecular halogen," and stated:*

Furthermore, the present application illustrates that the chemical reaction of a thermolabile halogen precursor with mercury is via its molecular halogen thermal decomposition product (e.g. chlorine Cl₂).

D.I. # 35-6, Amendment (Aug. 2003) at 9 (citing to the portion of the application that corresponds to the '692 Patent at 4:53-57).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

364. *Under the Plaintiffs' proposed claim constructions, there is nothing in the claims that instructs a POSA where, how, or when a bromide compound should be added to the coal combustion system in order to cause the desired reaction to proceed through the specified mechanism, beyond that there needs to be heat sufficient to dissociate the bromide compound.*

D.I. # 35-3, Oehr Decl. at ¶ 7.

Pl. Response: Disputed. The claims include the step of "injecting" a thermolabile molecular bromine precursor "into ... flue gas." A POSA would understand the scope of the claims in light of what is taught by the specification and understand where, how and when the bromide compound should be added to the system in order to achieve the claim elements. *See, e.g.* PFF ¶ 1165, 1165, 1192-1194. Beyond the need for sufficient temperatures for the bromide compound to decompose, for example, as taught by the specification, the claims themselves make clear that the injection of the bromide compounds cannot occur

further downstream than the particular collection device. Dkt. 35-1, '692 Patent, Reexamination certificate, claims 1 and 19.

Def. Reply: Plaintiffs' statement is argumentative and states a legal conclusion, and the cited evidence does not respond to the stated fact. Further, Plaintiffs' response is contradicted by the patent owner's testimony cited in Def. PFF ¶ 365, which reads as follows: "My invention was not about introducing a thermolabile molecular bromine precursor into any particular location in the coal-fired furnace or elements downstream of the furnace . . . the point of injection could be anywhere in coal combustion flue gas sufficiently hot to decompose the precursor, so that the resulting molecular bromine will react with elemental mercury in the coal combustion flue gas." D.I. # 35-3, Oehr Decl ¶ 7.

XI. OTHER OEHR PATENTS

365. *Oehr has numerous patents that specifically identify and claim different methods for introduction of additives to a combustion system. A POSA would expect the '692 Patent to likewise disclose with specificity if it contemplated the use of the thermolabile molecular bromine precursor by pretreating coal and/or injecting into the combustion zone.*

D.I. # 75, First Wilcox Report ¶¶ 108, 109.

Pl. Response: Disputed. This proposed fact is not directed to a fact but rather argument, opinion and/or in incorrect legal conclusion. *American National Property & Cas. Co. v. Graham*, No. 04-C-1185, 2006 U.S. Dist. LEXIS 41235 at *3-4 (E.D. Wis. June 2, 2006) (legal conclusions inappropriate as factual findings; such advocacy must be left to the argument portion of a brief and not proposed as a finding of fact); "Arguments have no place in proposed findings of fact or responses to such findings." *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007). It is directly contradicted by evidence. Plaintiffs do not dispute that the inventor of the '692 Patent, Klaus Oehr, is also a named inventor of other patents, however, Defendants do not identify to which patents they refer. Without specificity, the proposed fact finding is indefinite and should be rejected. Furthermore, at least some of the Oehr patents that were cited by Defendants in their summary judgment motion, do describe methods of introducing additives in a manner that is entirely consistent with Plaintiffs' proposed claim constructions of the '692 Patent claims. *See* Plaintiffs' Brief in Opposition to Defendants' Motion for Summary Judgment, Section II (D)(5)(b) & (D)(7). Further, the evidence shows that a POSA would not "expect the '692 Patent to likewise disclose with specificity if it contemplated the use of the thermolabile molecular bromine precursor by pretreating coal and/or injecting into the combustion zone." Dr. Fry has explained why Dr. Wilcox is wrong in her opinion on this point. Dkt. 73, Second Fry Report ¶¶ 158-163.

Def. Reply: Undisputed. This PFF is not legal argument, but rather a statement of fact. Plaintiffs' statement is argumentative and states a legal conclusion, and the cited materials do not dispute the stated fact. Further, for reasons set forth in D.I. # 107, Def. Op. Br. at § V. C. 2., Plaintiffs' assertion that "a POSA would not expect the '692 Patent to . . . disclose with specificity if it contemplated the use of the thermolabile molecular

bromine precursor by pretreating coal and/or injecting it into the combustion zone” is unsupported and incorrect.

A. U.S. Patent No. 6,250,235 ('235 Patent)

366. *Oehr's '235 Patent issued on June 26, 2001.*

Mark Decl. Ex 48, '235 Patent.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

367. *The '235 Patent describes use of lime as an additive in two ways: mixing the fuel with an additive, and then injecting such fuel-additive mixture into the combustion zone of the boiler; or injecting the fuel and additive separately into the combustion zone.*

Mark Decl. Ex 48, '235 Patent at 11:64–12:4; D.I. 75, First Wilcox Report ¶ 69; [REDACTED]

Pl. Response: Disputed. Defendants mischaracterize the '235 Patent. The '235 Patent describes a method of treating a fossil fuel for combustion that include heating the fossil fuel together with an additive that contains a lime flux in the combustion zone. Dkt. 73, Second Fry Report, ¶ 299 (emphasis added).

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact. Def. PFF ¶ 367 states that one use of lime in the '235 Patent is to “mix the fuel with an additive;” Plaintiffs’ response does not dispute this statement. Further, Plaintiffs cite no evidence to dispute the stated fact that the '235 Patent also discloses the injection of lime separately into the combustion zone. The portion of the '235 Patent cited in Def. PFF ¶ 366 references injecting “lime plus lime fluxing additive” into the combustion zone. D.I. # 90, Mark Decl. Ex. 48, '235 Patent at 11:64–12:4.

368. *The '235 Patent is cited as a reference in the '692 Patent.*

D.I. # 35-1, '692 Patent at 10:28–30.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

369. *The '235 Patent is discussed in the '692 Patent.*

D.I. # 35-1, '692 Patent at 2:37–56, 7:29–8:46.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

370. *The '235 Patent repeatedly references “treating a fossil fuel for combustion,” which involves “heating the fossil fuel and an additive in a combustion zone.”*

Mark Decl. Ex. 48, '235 Patent at Abstract, 8:11–14, 13:31–38; D.I. # 76, Second Wilcox Report ¶¶ 62–64.

Pl. Response: Disputed. Defendants mischaracterize the '235 Patent, and their proposed fact is incomplete and misleading. The '235 Patent states the following at the referenced citations:

“A method of treating a fossil fuel for combustion, which includes heating the fossil fuel and an additive in a combustion zone.”

“According to the invention there is provided a method of treating fossil fuel, especially coal or char, for combustion, which includes heating the fossil fuel and an additive, together with lime, in a combustion zone. The additive contains a lime (CaO) flux that lowers the melting point of lime sufficiently so that lime in the combustion zone melts wholly or partially.”

“Claim 1: A method of treating fossil fuel for combustion, comprising: heating a fossil fuel which contains ash and an additive in a combustion zone together with lime, wherein the additive contains a lime flux that lowers the melting point of said lime sufficiently so that said lime melts, wholly or partially.”

Dkt. 90–48, Mark Decl. Ex. 48, '235 Patent at Abstract, 8:11–14, 13:31–38.

Def. Reply: Undisputed. Def. PFF ¶ 370 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 370 to the '235 Patent.

371. *The '235 Patent states:*

It is clear, however, that the maximum benefit of the current invention may be obtained under conditions where the lime plus lime fluxing additive come into intimate contact with the fossil fuel, e.g. coal or char, either by mixing them in their solid form prior to injection into the fossil fuel combustor, and/or by injecting them into a combustor with sufficient turbulence to cause collisions between the “fluxed lime” and the fossil fuel combustion ash.

Mark Decl. Ex. 48, '235 Patent at 11:64–12:4; D.I. 76, Second Wilcox Report ¶ 62.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

372. *The '235 Patent distinguishes methods that include mixing lime plus lime fluxing additive plus coal “either by mixing them in their solid form prior to injection into the fossil fuel combustor, and/or by injecting them into a combustor with sufficient turbulence”*

Mark Decl. Ex. 48, '235 Patent at 11:67–12:3.

Pl. Response: Disputed. Defendants mischaracterize the '235 Patent, and their proposed fact is incomplete and misleading. The '235 Patent states:

It is clear, however, that the maximum benefit of the current invention may be obtained under conditions where the lime plus lime fluxing additive come into intimate contact with the fossil fuel, e.g. coal or char, either by mixing them in their solid form prior to injection into the fossil fuel combustor, and/or by injecting them into a combustor with sufficient turbulence to cause collisions between the “fluxed lime” and the fossil fuel combustion ash. Dkt. 103, PFF ¶ 421.

The '235 Patent is directed to a “method of treating a fossil fuel for combustion.” Dkt. 103, PFF ¶ 422.

The '235 Patent is not directed to a method of treating flue gas. Therefore, it is not surprising that the inventor did not describe introduction of the additive as “injecting into flue gas.” The evidence clearly demonstrates, however, that it would be correct to describe the addition of the additive claimed in the '235 patent as “injecting into flue gas.” Dkt. 103, PFF ¶ 419-426.

Def. Reply: Undisputed. Def. PFF ¶ 372 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 372 to the '235 Patent. Plaintiffs' response states additional facts that are immaterial to Def. PFF ¶ 372.

373. *The references of the '235 Patent include language variously directed to “heating a fossil fuel...and an additive in a combustion zone together with lime” wherein (i) “the additive is injected into the combustion zone”; (ii) “the additive is mixed with the fossil fuel before furnace injection”; and (iii) a method that “includ[es] injecting steam into a combustion zone or post-combustion zone.”*

Mark Decl. Ex. 48, '235 Patent at 13:34–35, 14:60–62, 15:4–5.

Pl. Response: Disputed. Defendants' proposed finding of fact is vague with respect to “[t]he references of the '235 Patent,” therefore is ambiguous and unclear as phrased and is disputed for that reason. Plaintiffs further dispute Defendants' proposed fact, as it relies on language from the claims, but does not include all of the claim language and is mischaracterizing. Dkt. 90–48, Mark Decl. Ex. 48, '235 Patent at 13:34–35, 14:60–62, 15:4–5.

The '235 Patent is directed to a “method of treating a fossil fuel for combustion.” Dkt. 103, PFF ¶ 422.

The '235 Patent is not directed to a method of treating flue gas. Therefore, it is not surprising that the inventor did not describe introduction of the additive as “injecting into flue gas.” The evidence clearly demonstrates, however, that it would be correct to describe the addition of the additive claimed in the '235 patent as “injecting into flue gas.” Dkt. 103, PFF ¶ 419-426.

Def. Reply: Undisputed. Def. PFF ¶ 373 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 373 to the '235 Patent. Plaintiffs' response states additional facts that are immaterial to Def. PFF ¶ 373.

374. *When the '235 Patent discusses the addition of lime or alkali flux, the specification discloses that they can be an additive to the coal.*

Mark Decl. Ex. 48, '235 Patent at 8:31–36; D.I. # 76, Second Wilcox Report ¶¶ 62–64.

Pl. Response: Disputed. Defendants mischaracterize the '235 Patent, and their proposed fact is incomplete and misleading. The '235 Patent states:

It is clear, however, that the maximum benefit of the current invention may be obtained under conditions where the lime plus lime fluxing additive come into intimate contact with the fossil fuel, e.g. coal or char, either by mixing them in their solid form prior to injection into the fossil fuel combustor, and/or by injecting them into a combustor with sufficient turbulence to cause collisions between the “fluxed lime” and the fossil fuel combustion ash. Dkt. 103, PFF ¶ 421.

The '235 Patent is directed to a “method of treating a fossil fuel for combustion.” Dkt. 103, PFF ¶ 422.

The '235 Patent is not directed to a method of treating flue gas. Therefore, it is not surprising that the inventor did not describe introduction of the additive as “injecting into flue gas.” The evidence clearly demonstrates, however, that it would be correct to describe the addition of the additive claimed in the '235 patent as “injecting into flue gas.” Dkt. 103, PFF ¶ 419-426.

Def. Reply: Undisputed. Def. PFF ¶ 374 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 374 to the '235 Patent. Plaintiffs' response states additional facts that are immaterial to Def. PFF ¶ 374.

375. *The '692 Patent states that Oehr's '235 Patent taught the addition of alkali compounds for a variety of reasons, including desulphurization and reduction of nitrogen oxide emissions.*

D.I. # 35-1, '692 Patent at 2:37–47.

Pl. Response: Disputed. Defendants have mischaracterized and improperly limited the cited portion of the '692 Patent, and Defendants' proposed fact is disputed for that reason. The '692 Patent states the following:

“U.S. Pat. No. 6,250,235 issued to Oehr and Yao describes the addition of a fossil fuel and additive in a combustion Zone to achieve the following results alone or in combination: accelerated combustion, desulphurization, nitrogen oxides emission reduction, pozzolanic or cementitious products production or combustor anti-fouling (Oehr, Klaus H. and Felix Z. Yao. 2001. “Method and Product for Improved Fossil Fuel Combustion”. U.S. Pat. No. 6,250,235).

Dkt. No. 35-1, '692 Patent at 2:37–45.

The '692 Patent's discussion of the '235 Patent does not describe the method of introducing the additive in the '235 Patent as “injecting into flue gas” for the same reason it is not described that way in the '235 Patent itself—because to do so

would have suggested to the reader that the additive could be introduced anywhere in the flue gas (including but not limited to the combustion zone) when in reality the invention of the '235 patent only works when the additive is introduced into the combustion zone. Dkt. 103, PFF ¶¶ 420-426.

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion, and Plaintiffs have not cited evidence that disputes the stated fact. Further, Def. PFF ¶ 374 does not state that "The '692 Patent's discussion of the '235 Patent describe[s] the method of introducing the additive in the '235 Patent as 'injecting into the flue gas.'"

376. *The Oehr patent No. 6,250,235, cited in the '692 Patent Application, teaches the addition of a substance to the combustion zone.*

D.I. # 35-6, Utility Patent Application No. 10/073986 (Feb. 14, 2002), at 213–214 (citing Mark Decl. Ex. 48, '235 Patent).

Pl. Response: Disputed. This proposed finding of fact is vague in its use of the term "substance" and therefore is ambiguous and unclear as phrased and is disputed for that reason.

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact. Plaintiffs' objection to "substance" is immaterial.

377. *Oehr's '235 Patent describes the use of a coal additive that is mixed with coal and then introduced into the combustor.*

Mark Decl. Ex. 48, '235 Patent.

Pl. Response: Disputed. Defendants mischaracterize the '235 Patent, and their proposed fact is incomplete and misleading. The '235 Patent states:

It is clear, however, that the maximum benefit of the current invention may be obtained under conditions where the lime plus lime fluxing additive come into intimate contact with the fossil fuel, e.g. coal or char, either by mixing them in their solid form prior to injection into the fossil fuel combustor, and/or by injecting them into a combustor with sufficient turbulence to cause collisions between the "fluxed lime" and the fossil fuel combustion ash. Dkt. 103, PFF ¶ 421.

The '235 Patent is directed to a "method of treating a fossil fuel for combustion." Dkt. 103, PFF ¶ 422.

The '235 Patent is not directed to a method of treating flue gas. Therefore, it is not surprising that the inventor did not describe introduction of the additive as "injecting into flue gas." The evidence clearly demonstrates, however, that it would be correct to describe the addition of the additive claimed in the '235 patent as "injecting into flue gas." Dkt. 103, PFF ¶ 419-426.

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion, and Plaintiffs have not cited evidence that disputes the stated fact. Further, Def. PFF ¶ 377 does not mischaracterize

the record as evidenced by comparing Def. PFF ¶ 377 to the '235 Patent. Plaintiffs' response states additional facts that are immaterial to Def. PFF ¶ 377.

378. *The term “alkali flux” refers to a genus of compounds including silicon, aluminum, and/or iron containing compounds (including calcium silicate, aluminum oxide, aluminum silicates, iron oxide, iron silicates, and silica).*

Case 280 D.I. # 72, First Fry Report at ¶ 213.

Pl. Response: Disputed. Defendants' proposed finding of fact seeks a legal conclusion with respect to the term “genus of compounds.” Defendants have mischaracterized Dr. Fry's testimony. Dr. Fry does not refer to the term “alkali flux” as a “genus of compounds.” Rather, Dr. Fry testifies that “S-Sorb also contains an alkali flux such as silicon, aluminum, and/or iron containing compounds (including calcium silicate, aluminum oxide, aluminum silicates, iron oxide, iron silicates, and silica).” Dkt. 72, First Fry Report, ¶ 213.

Def. Reply: Undisputed. Def. PFF ¶ 378 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 378 to the First Fry Report at ¶ 213.

379. *Plaintiffs' expert witness, Andrew Fry, stated that his understanding of Claims 10 and 24 of the '692 Patent requires that the alkali flux be an additive.*

D.I. # 73, Second Fry Report ¶ 212 (citing Mark Decl. Ex. 48, '235 Patent).

Pl. Response: Disputed. Defendants' proposed finding of fact is based a mischaracterization of the cited evidence, and is therefore Pl. Response: Disputed. Dr. Fry testified that: “As I understand the scope of claims 10 and 24 of the '692 Patent, this claim element requires that alkali flux is something that is added to the system, as opposed to something that occurs naturally in the coal. The '692 Patent specification refers to the “addition” of lime plus a lime flux and refers to the lime plus a lime flux as an “additive” and “additive formula.” '692 Patent at 7:29-38. The specification also refers to the '235 Patent, saying the '235 Patent describes adding a fossil fuel with an “additive” '692 Patent at 2:37-47. Because I understand claims 10 and 24 of the '692 Patent to require that the alkali flux be an additive, rather than something that is naturally present in the coal or coal ash, Julien does not disclose this claim element.” Dkt. 73, Second Fry Report, ¶ 212.

Def. Reply: Undisputed. Def. PFF ¶ 379 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 379 to the Second Fry Report at ¶ 212. The quote cited by Plaintiffs demonstrates that Def. PFF ¶ 379 is supported and not taken out of context.

380. *Claims 10 and 24 of the '692 Patent do not claim an alkali flux as an additive.*

D.I. # 35-1, '692 Patent at Claims 10, 24.

Pl. Response: Disputed. The proposed finding of fact is argumentative, and Plaintiffs dispute for that reason. McMahon v. Carroll College, No. 04-C-384,

2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”).

Plaintiffs dispute this proposed finding of fact as it mischaracterizes the document, and is incomplete. The claimed invention of Claims 10 and 24 are defined by the entire language of Claims 10 and 24 of the Patent as it exists following the reexamination, and subject to the parties’ agreed-upon construction of thermolabile molecular bromine precursor.

Dr. Fry testified that: “As I understand the scope of claims 10 and 24 of the ’692 Patent, this claim element requires that alkali flux is something that is added to the system, as opposed to something that occurs naturally in the coal. The ’692 Patent specification refers to the “addition” of lime plus a lime flux and refers to the lime plus a lime flux as an “additive” and “additive formula.” ’692 Patent at 7:29-38. The specification also refers to the ’235 Patent, saying the ’235 Patent describes adding a fossil fuel with an “additive” ’692 Patent at 2:37-47. Because I understand claims 10 and 24 of the ’692 Patent to require that the alkali flux be an additive, rather than something that is naturally present in the coal or coal ash, Julien does not disclose this claim element.” Dkt. 73, Second Fry Report, ¶ 212.

Def. Reply: Undisputed. Def. PFF ¶ 380 is supported by the cited evidence. Claims 10 and 24 of the ’692 Patent do not describe alkali flux as an additive. In relevant part, Claims 10 and 24 read, “[a] method as claimed in claim 1, wherein the alkaline solid particles are those derived from the fusion of coal ash with alkali and an alkali flux,” and “[t]he method of claim 19 wherein the alkaline solid particles provided at Step (b) are derived from the fusion of coal ash with alkali and an alkali flux.” D.I. # 35, ’692 Patent, at Claim 10, 24.

381. *The ’235 Patent repeatedly references “treating a fossil fuel for combustion,” which involves “heating the fossil fuel and an additive in a combustion zone.”*

Mark Decl. Ex. 48, ’235 Patent, Abstract.

Pl. Response: Disputed. Defendants mischaracterize the ’235 Patent, and their proposed fact is incomplete and misleading. The ’235 Patent states the following at the referenced citations:

“A method of treating a fossil fuel for combustion, which includes heating the fossil fuel and an additive in a combustion zone.”

“According to the invention there is provided a method of treating fossil fuel, especially coal or char, for combustion, which includes heating the fossil fuel and an additive, together with lime, in a combustion zone. The additive contains a lime (CaO) flux that lowers the melting point of lime sufficiently so that lime in the combustion zone melts wholly or partially.”

“Claim 1: A method of treating fossil fuel for combustion, comprising: heating a fossil fuel which contains ash and an additive in a combustion zone together with lime, wherein the additive contains a lime flux that lowers the melting point of said lime sufficiently so that said lime melts, wholly or partially.”

Dkt. 90–48, Mark Decl. Ex. 48, ’235 Patent at Abstract, 8:11–14, 13:31–38.

Def. Reply: Undisputed. Def. PFF ¶ 381 does not mischaracterize the '235 Patent, as is evident by comparing Def. PFF ¶ 381 and the abstract of the '235 Patent. Each of the passages quoted in Plaintiffs' response supports the stated fact that the patent repeatedly references "treating a fossil fuel for combustion," which includes "heating the fossil fuel and an additive in a combustion zone."

382. *The '235 Patent describes:*

It is clear, however, that the maximum benefit of the current invention may be obtained under conditions where the lime plus lime fluxing additive come into intimate contact with the fossil fuel, e.g. coal or char, either by mixing them in their solid form prior to injection into the fossil fuel combustor, and/or by injecting them into a combustor with sufficient turbulence to cause collisions between the "fluxed lime" and the fossil fuel combustion ash.

Mark Decl. Ex. 48 '235 Patent at 11:64-12:4.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

383. *The '235 Patent distinguishes methods that include mixing lime plus lime fluxing additive plus coal "either by mixing them in their solid form prior to injection into the fossil fuel combustor, and/or by injecting them into a combustor with sufficient turbulence. . ."*

Mark Decl. Ex. 48, '235 Patent at 11:67-12:3.

Pl. Response: Disputed. Defendants mischaracterize the '235 Patent, and their proposed fact is incomplete and misleading. The '235 Patent states:

It is clear, however, that the maximum benefit of the current invention may be obtained under conditions where the lime plus lime fluxing additive come into intimate contact with the fossil fuel, e.g. coal or char, either by mixing them in their solid form prior to injection into the fossil fuel combustor, and/or by injecting them into a combustor with sufficient turbulence to cause collisions between the "fluxed lime" and the fossil fuel combustion ash. Dkt. 103, PFF ¶ 421.

The '235 Patent is directed to a "method of treating a fossil fuel for combustion." Dkt. 103, PFF ¶ 422.

The '235 Patent is not directed to a method of treating flue gas. Therefore, it is not surprising that the inventor did not describe introduction of the additive as "injecting into flue gas." The evidence clearly demonstrates, however, that it would be correct to describe the addition of the additive claimed in the '235 patent as "injecting into flue gas." Dkt 103, PFF ¶¶ 419-426.

Def. Reply: Undisputed. Def. PFF ¶ 383 does not mischaracterize the '235 Patent. Each of the passages quoted by Plaintiffs supports the stated

fact that the '235 Patent distinguishes methods to include mixing lime plus lime fluxing additive plus coal in the ways stated in Def. PFF ¶ 383.

384. *The claims of the '235 Patent include language variously directed to “heating a fossil fuel. . . and an additive in a combustion zone together with lime” wherein (i) “the additive is injected into the combustion zone”; (ii) “the additive is mixed with the fossil fuel before furnace injection”; and (iii) a method that “include[es] injecting steam into a combustion zone or post-combustion zone.”*

Mark Decl. Ex. 48, '235 Patent at 13:34–35, 14:49–50, 14:60–62, 15:4–5;
[REDACTED]

Pl. Response: Disputed. This proposed finding of fact is vague in its use of the phrase “variously directed” and therefore is ambiguous and unclear as phrased and is disputed for that reason.

Moreover, the claims of the '235 patent are defined by their entire claim language. As Defendants' proposed finding of fact simply chooses particular language while ignoring other language, Plaintiffs dispute the proposed finding of fact as incomplete and mischaracterizing. For example, particular claims of the '235 Patent that are referenced in Defendants' citations state the following:

“A method of treating a fossil fuel for combustion, which includes heating the fossil fuel and an additive in a combustion zone.”

“According to the invention there is provided a method of treating fossil fuel, especially coal or char, for combustion, which includes heating the fossil fuel and an additive, together with lime, in a combustion zone. The additive contains a lime (CaO) flux that lowers the melting point of lime sufficiently so that lime in the combustion zone melts wholly or partially.”

“Claim 1: A method of treating fossil fuel for combustion, comprising: heating a fossil fuel which contains ash and an additive in a combustion zone together with lime, wherein the additive contains a lime flux that lowers the melting point of said lime sufficiently so that said lime melts, wholly or partially.”

Dkt. 90–48, Mark Decl. Ex. 48, '235 Patent at Abstract, 8:11–14, 13:31–38.

Def. Reply: Undisputed. Def. PFF ¶ 384 is not unclear as phrased, as is evident by comparing Def. PFF ¶ 384 with the text of the '235 Patent.

385. *The '235 Patent discloses that lime and lime flux additives that may be used as additives to “treat[] fossil fuel, especially coal or char, for combustion,” and also claims methods “wherein the additive is injected into the combustion zone.”*

Mark Decl. Ex. 48, '235 Patent at 8:11–15, 14:49–50.

Pl. Response: Disputed. Defendants mischaracterize the '235 Patent, and their proposed fact is incomplete and misleading. The '235 Patent states the following at the referenced citations:

“According to the invention there is provided a method of treating fossil fuel, especially coal or char, for combustion, which includes heating the fossil fuel and an additive, together with lime, in a combustion zone. The additive contains a lime (CaO) flux that lowers the melting point of lime sufficiently so that lime in the combustion zone melts wholly or partially.”

“Claim 1: A method of treating fossil fuel for combustion, comprising: heating a fossil fuel which contains ash and an additive in a combustion zone together with lime, wherein the additive contains a lime flux that lowers the melting point of said lime sufficiently so that said lime melts, wholly or partially.”

“Claim 36: The method as claimed in claim 1, wherein the additive is injected into the combustion zone.”

The '235 Patent is directed to a “method of treating a fossil fuel for combustion.” Dkt. 103, PFF ¶ 422.

The '235 Patent is not directed to a method of treating flue gas. Therefore, it is not surprising that the inventor did not describe introduction of the additive as “injecting into flue gas.” The evidence clearly demonstrates, however, that it would be correct to describe the addition of the additive claimed in the '235 patent as “injecting into flue gas.” Dkt. 103, PFF ¶ 419-426.

Def. Reply: Undisputed. Def. PFF ¶ 385 does not mischaracterize the '235 Patent, as is evident by comparing Def. PFF ¶ 385 to the text of the '235 Patent. Plaintiffs' added quotations do not rebut the stated fact.

386. *The '692 Patent does not characterize the “coal additive” work described and claimed in the same inventor’s prior '235 Patent as “injecting . . . into the flue gas,” but rather describes it as using coal additive technology.*

D.I. # 35-1, '692 Patent at 7:29–37 (describing '235 Patent teaching of use of a calcium oxide “additive” to coal), 9:36 (same).

Pl. Response: Disputed. The proposed finding of fact is argumentative, and Plaintiffs dispute for that reason. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”).

Plaintiffs further dispute Defendants' proposed fact as it mischaracterizes the evidence being used to support the proposed finding of fact.

The '235 Patent is directed to a “method of treating a fossil fuel for combustion.” Dkt. 103, PFF ¶ 422.

The '235 Patent is not directed to a method of treating flue gas. Therefore, it is not surprising that the inventor did not describe introduction of the additive as “injecting into flue gas.” The evidence clearly demonstrates, however, that it would be correct to describe the addition of the additive claimed in the '235 patent as “injecting into flue gas.” Dkt. 103, PFF ¶ 419-426.

The '692 Patent's discussion of the '235 Patent does not describe the method of introducing the additive in the '235 Patent as “injecting into flue gas” for the same

reason it is not described that way in the '235 Patent itself—because to do so would have suggested to the reader that the additive could be introduced anywhere in the flue gas (including but not limited to the combustion zone) when in reality the invention of the '235 patent only works when the additive is introduced into the combustion zone. Dkt. 103, PFF ¶¶ 420-426.

Def. Reply: Undisputed. 'Def. PFF ¶ 386 does not mischaracterize the '235 Patent, as is evident by comparing Def. PFF ¶ 386 to the text of the '235 Patent. Plaintiffs' added quotations do not rebut the stated fact and admit that "it is not surprising that the inventor did not describe introduction of the additive as 'injecting into flue gas'" and that "it is not described that way in the '235 Patent itself."

387. *The '692 Patent does not characterize the introduction of the additive into the combustion zone, described and claimed in his prior '235 Patent, as "injecting . . . into the flue gas," but rather describes it as adding the additive "in a combustion zone."*

D.I. # 35-1, '692 Patent at 2:37–45 (describing '235 Patent as teaching "the addition of a fossil fuel and additive in a combustion zone").

Pl. Response: Disputed. The proposed finding of fact is argumentative, and Plaintiffs dispute for that reason. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) ("Arguments have no place in proposed findings of fact or responses to such findings.").

Plaintiffs further dispute Defendants' proposed fact as it mischaracterizes the evidence being used to support the proposed finding of fact.

The '235 Patent is directed to a "method of treating a fossil fuel for combustion." Dkt. 103, PFF ¶ 422.

The '235 Patent is not directed to a method of treating flue gas. Therefore, it is not surprising that the inventor did not describe introduction of the additive as "injecting into flue gas." The evidence clearly demonstrates, however, that it would be correct to describe the addition of the additive claimed in the '235 patent as "injecting into flue gas." Dkt. 103, PFF ¶ 419-426.

The '692 Patent's discussion of the '235 Patent does not describe the method of introducing the additive in the '235 Patent as "injecting into flue gas" for the same reason it is not described that way in the '235 Patent itself—because to do so would have suggested to the reader that the additive could be introduced anywhere in the flue gas (including but not limited to the combustion zone) when in reality the invention of the '235 patent only works when the additive is introduced into the combustion zone. Dkt. 103, PFF ¶¶ 420-426.

Def. Reply: Undisputed. Def. PFF ¶ 387 does not mischaracterize the '235 Patent, as is evident by comparing Def. PFF ¶ 387 to the text of the '235 Patent. Plaintiffs' added quotations do not rebut the stated fact and admit that "it is not surprising that the inventor did not describe introduction of the additive as 'injecting into flue gas'" and that "it is not described that way in the '235 Patent itself."

388. *The '692 Patent does not use the term “injecting . . . into the flue gas,” but rather expressly characterizes that earlier '235 Patent as using coal additive technology.*

D.I. # 35-1, '692 Patent at 2:37–45 (describing '235 Patent as teaching “the addition of a fossil fuel and additive in a combustion zone”), 7:29–37 (describing '235 Patent teaching of use of a calcium oxide “additive” to coal), 9:36 (same).

Pl. Response: Disputed. Plaintiffs disputed this proposed finding of fact as the '692 Patent expressly uses the term “injecting . . . into the flue gas.” See, e.g., Dkt. 35-1 at claim 19.

Plaintiffs further dispute this proposed finding of fact as it mischaracterizes the '235 Patent.

The '235 Patent is directed to a “method of treating a fossil fuel for combustion.” Dkt. 103, PFF ¶ 422.

The '235 Patent is not directed to a method of treating flue gas. Therefore, it is not surprising that the inventor did not describe introduction of the additive as “injecting into flue gas.” The evidence clearly demonstrates, however, that it would be correct to describe the addition of the additive claimed in the '235 patent as “injecting into flue gas.” Dkt. 103, PFF ¶ 419-426.

The '692 Patent's discussion of the '235 Patent does not describe the method of introducing the additive in the '235 Patent as “injecting into flue gas” for the same reason it is not described that way in the '235 Patent itself—because to do so would have suggested to the reader that the additive could be introduced anywhere in the flue gas (including but not limited to the combustion zone) when in reality the invention of the '235 patent only works when the additive is introduced into the combustion zone. Dkt. 103, PFF ¶¶ 420-426.

Def. Reply: Undisputed. Def. PFF ¶ 388 does not mischaracterize the '235 Patent, as is evident by comparing Def. PFF ¶ 388 to the text of the '235 Patent. Plaintiffs' added quotations do not rebut the stated fact. To clarify, Def. PFF ¶ 388 statement that “The '692 Patent does not use the term ‘injecting . . . into the flue gas’” is a specific reference to the section of the '692 Patent discussing the '235 Patent. Additionally, Plaintiffs' response admits that “[t]he '692 Patent's discussion of the '235 Patent does not describe the method of introducing the additive in the '235 Patent as ‘injecting into flue gas.’”

389. *The Oehr patent No. 6,250,235, cited in the '692 Patent Application, teaches the addition of a substance to the combustion zone.*

D.I. # 35-6, Utility Patent Application No. 10/073986 (Feb. 14, 2002), at 213–214 (citing Mark Decl. Ex. 48, '235 Patent).

Pl. Response: Disputed. This proposed finding of fact is vague in its use of the term “substance” and therefore is ambiguous and unclear as phrased and is disputed for that reason.

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact. Plaintiffs' objection to "substance" is immaterial.

B. U.S. Patent No. 5,817,282 ('282 Patent)

390. *Oehr's '282 Patent issued on October 6, 1998.*

Mark Decl. Ex. 52, U.S. Patent No. 5,817,282 (" '282 Patent").

Pl. Response: Undisputed.

Def. Reply: Undisputed.

391. *The '282 Patent claims inventions for reducing nitrogen oxides from combustion flue gas "by injecting an additive directly into the combustor, combustion zone or into the flue gas."*

Mark Decl. Ex. 52, '282 Patent at 1:9–11; D.I. # 71, Fry Dep. 105:3–108:7.

Pl. Response: Disputed. Plaintiffs dispute Defendants' proposed finding of fact as it misconstrues the evidence being relied on. In particular, the cited portion of the patent being relied on by Defendants is for the "Field of the Invention" and not specifically discussing what the claims are directed to.

Plaintiffs' expert has opined that the '282 Patent is directed to an invention "for reducing the nitrogen oxide content of a flue gas produced by the combustion of fuel by introducing a nitrogen oxide removal agent into either nitrogen oxide contaminated flue gas or the fuel to be combusted." Dkt. 73, Second Fry Report, ¶ 160.

Def. Reply: Undisputed. Def. PFF ¶ 391 does not misconstrue the '282 Patent, as is evident by comparing Def. PFF ¶ 391 to the text of the '282 Patent. Plaintiffs do not dispute that the quoted language from the '282 Patent describes the inventions toward which the patent is directed. To the extent Plaintiffs' response states that the '282 Patent is directed to an invention "for reducing the nitrogen oxide content of a flue gas produced by the combustion of fuel by introducing a nitrogen oxide removal agent into either nitrogen oxide contaminated flue gas or the fuel to be combusted," it is unsupported and incorrect. D.I. # 75, Opening Wilcox Report ¶ 108.

392. *Oehr's '282 Patent relates to "a method of reducing acid nitrogen oxides from combustion flue gas by injecting an additive directly into the combustor, combustion zone or into the flue gas to reduce said nitrogen oxides."*

Mark Decl. Ex. 52, '282 Patent at 1:8–11.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

393. *Plaintiffs' expert witness, Andrew Fry, testified that he understood Oehr's '282 Patent to describe method involving adding an additive directly into the combustor, adding an additive into the combustion zone, or adding an additive into the flue gas.*

Mark Decl. Ex. 52, '282 Patent at 1:8–11; D.I. # 71, Fry Dep. 107:6–108:5.

Pl. Response: Disputed. Dr. Fry did not testify as stated in Defendants' proposed finding of fact. Rather, Dr. Fry read from the '282 Patent and then stated "Yes, that's what it says." In particular, Dr. Fry testified as follows:

MR. FARNEY: Counsel, is this the '282 patent?

MR. EVALL: Yes, correct.

MR. FARNEY: Column 1?

MR. EVALL: Yes.

MR. FARNEY: Lines 7 through 11?

MR. EVALL: Yes. It's under the "Field of the Invention."

THE WITNESS: Yes.

MR. FARNEY: Okay. Thank you.

Q. (By Mr. Evall) Tell me when you've had a moment to review that sentence.

A. I have.

Q. Do you agree that that sentence describes first a method of reducing acid nitrogen oxides from the combustion flue gas by the use of adding an additive directly into the combustor?

A. By injecting an additive directly into the combustor.

Q. Okay. And do you agree that it also describes a method of reducing acid nitrogen oxides from combustion flue gas by injecting an additive into the flue gas?

A. Into the combustion zone or into the flue gas.

Q. Okay.

A. Yes, that's what it says.

Dkt. No. 71, Fry Dep. 107:6–108:5.

Def. Reply: Undisputed. Def. PFF ¶ 393 does not mischaracterize Fry's testimony, as is evident by comparing Def. PFF ¶ 393 to the deposition transcript. Plaintiffs' added quotations do not rebut the stated fact.

394. *Plaintiffs' expert witness, Andrew Fry, testified that he understood Oehr's '282 Patent, to teach that reagent can be added "either into the fuel or into the ductwork containing the flue gas."*

Mark Decl. Ex. 52, '282 Patent at Abstract; D.I. # 71, Fry Dep. 164:3–165:11.

Pl. Response: Disputed. Plaintiffs' dispute Defendants' proposed finding of fact as incomplete, and therefore misleading. In relevant part, Dr. Fry testified as follows:

- Q. (By Mr. Evall) Okay. If you don't mind, could you take out Fry Exhibit 9, which is the '282 patent, and could you take a look at the first sentence of the abstract? Just take a moment to review it. It's on the first page. Have you had a moment to review that?
- A. Still working on it.
- Q. All right.
- A. Okay.
- Q. Okay. That first sentence discloses adding a nitrogen oxide removal agent onto the fuel. Is that -- is that right?
- A. The exhibit says: "By introducing a nitrogen oxide removal agent into either the nitrogen oxide contaminated flue gas or the fuel to be combusted."
- Q. (By Mr. Evall) Okay. Is that your answer?
- A. That's what it says.
- Q. Okay. And do you understand that -- do you understand the reference to introducing a nitrogen oxide removal agent into the fuel to be combusted to be referring to adding it to the fuel?
- A. I understand from that sentence that if I want to reduce the nitrogen oxide content of a flue gas, I can add reagent either into the fuel or into the ductwork containing the flue gas.

Dkt. 71, Fry Dep. 164:3–165:11.

Def. Reply: Undisputed. Def. PFF ¶ 393 is not misleading as to Fry's testimony, as is evident by comparing Def. PFF ¶ 394 to the deposition transcript. Plaintiffs' added quotations do not rebut the stated fact.

C. U.S. Patent No. 8,142,548 ('548 Patent)

395. *Oehr's '548 Patent issued on March 27, 2012.*

Mark Decl. Ex. 51, '548 Patent.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

396. *The '548 Patent describes the use of partially combusted, carbon-enriched alkaline coal particles into flue gas, acting as an alternative to activated carbon.*

Mark Decl. Ex. 51, '548 Patent at 1:61–67, 2:32–36; D.I. # 76, Second Wilcox Report ¶ 73.

Pl. Response: Disputed. Defendants' proposed finding of fact is not supported by the cited evidence, and is contradicted by Plaintiffs' evidence.

In particular, the '548 Patent describes an invention involving taking a portion of uncombusted coal and injecting it into flue gas later downstream "ahead of a particulate collection device." Dkt. 103, PFF ¶¶ 308, 548.

Claim 1 of the '548 Patent provides: "A method of treating combustion flue gas containing mercury, said method comprising the steps of: injecting a halogen into said flue gas; and injecting partially combusted, carbon enriched alkaline coal ash

solid particles into said flue gas ahead of a particulate collection device, in order to adsorb at least a portion of the mercury.” Dkt. 103, PFF ¶ 441 at Claim 1.

The ‘548 Patent teaches that the injection of coal ash from partial coal combustion is “injected into the ductwork” of the power plant “anywhere in between combustion chamber 12 and particulate collection device 30.” PFF ¶ 910.

Def. Reply: Undisputed. Def. PFF ¶ 396 is supported by the ‘548 Patent, as is evident by comparing Def. PFF ¶ 396 to the ‘548 Patent. Specifically, Claim 1 of the ‘548 Patent, reproduced by Plaintiffs, plainly states that it provides for “injecting partially combusted, carbon-enriched alkaline coal ash solid particles into said flue gas,” consistent with the description in Def. PFF ¶ 396.

397. *The partially combusted coal can be obtained by extracting a portion of the burning coal from the combustion chamber (so called “thief coal”) for use with the flue gas.*

Mark Decl. Ex. 51, ‘548 Patent at 3:5–15; D.I. # 76, Second Wilcox Report ¶ 73.

Pl. Response: Disputed. Defendants’ proposed finding of fact is not supported by the referenced citation, which simply states:

“Using embodiments of the current invention, lignite or subbituminous coals **20** are injected into combustion chamber **12**. The high temperatures in the chamber **12** activates the coal and imparts an alteration within the coal, at this stage, however, the activated coal has little affinity for mercury due to the high temperatures in the chamber. Prior to fully burning, a portion of this activated coal is extracted from combustion chamber by thief **22**. The size of the extracted coal particles can be similar to the size of coal that was injected into the combustion chamber **12**. Its size may also be changed due to its treatment in the combustion chamber.”

As Plaintiffs have explained, the ‘548 Patent describes an invention involving taking a portion of uncombusted coal and injecting it into flue gas later downstream “ahead of a particulate collection device.” Dkt. 103, PFF ¶¶ 308, 548.

Claim 1 of the ‘548 Patent provides: “A method of treating combustion flue gas containing mercury, said method comprising the steps of: injecting a halogen into said flue gas; and injecting partially combusted, carbon enriched alkaline coal ash solid particles into said flue gas ahead of a particulate collection device, in order to adsorb at least a portion of the mercury.” Dkt. 103, PFF ¶ 441 at Claim 1.

The ‘548 Patent teaches that the injection of coal ash from partial coal combustion is “injected into the ductwork” of the power plant “anywhere in between combustion chamber 12 and particulate collection device 30.” PFF ¶ 910.

Def. Reply: Undisputed. Plaintiffs assert additional facts, but they do not raise a dispute of the stated fact. The cited portions of the ‘548 Patent are consistent with Defendants’ description of the patent’s method for obtaining partially combusted coal. Further, Plaintiffs’ response does not dispute that Wilcox stated, “The partially-combusted coal can be obtained

by extracting a portion of the burning coal from the combustion chamber (so called “thief coal”) for use with the flue gas,” citing the ‘548 Patent.

398. *Claim 1 of the ‘548 Patent reads:*

1. A method of treating combustion flue gas containing mercury, said method comprising the steps of:

injecting a halogen into said flue gas; and

injecting partially combusted, carbon enriched alkaline coal ash solid particles into said flue gas ahead of a particulate collection device, in order to adsorb at least a portion of the mercury.

Mark Decl. Ex. 51, ‘548 Patent at 7:6–7:13.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

399. *If a POSA were to try to apply Plaintiffs’ proposed constructions to the ‘548 Patent, the phrase “injecting . . . into said flue gas” would make no sense to a POSA, because Claim 1 of that patent would then include injection of the partially combusted coal particles back into the combustion zone, where rather than accomplishing the goal of the invention by acting as “activated” carbon to adsorb mercury from the flue gas, those particles would simply be further combusted.*

D.I. # 76, Second Wilcox Report ¶ 74.

Pl. Response: Disputed. This proposed finding is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). Claim 1 of the ‘548 Patent clearly provides for “injecting a halogen into said flue gas.” Dkt. 103, PFF ¶ 441 at Claim 1. The ‘548 Patent also different terminology when discussing the “coal ash solid particles,” instead requiring “injecting . . . coal ash solid particles into said flue gas ahead of a particulate collection device in order to adsorb at least a portion of the mercury.” *Id.* This qualifier on what portion of the flue gas the coal ash solid particles, in the context of a proper construction of the claims of the ‘548 patent, would certainly require that that phrase require injection of the coal ash solid particles downstream near the particulate collection devices, and not upstream in the combustion zone. The fact the claims needs a qualifier on “flue gas” to which the coal ash solid particles is to be injected in or to exclude the flue gas in the combustion zone shows, again, that “flue gas” is understood to exist in the combustion zone. Dkt. 103, PFF ¶ 442. The ‘548 Patent specifically teaches that the injection of coal ash from partial coal combustion is “injected into the ductwork” of the power plant “anywhere in between combustion chamber 12 and particulate collection device 30.” PFF ¶ 910. Notably, unlike in the ‘692 Patent, the ‘548 Patent’s specification identifies an upstream limit on the location where the injection can take place. Moreover, if “injecting into flue gas” had the special

meaning that Defendants claim, the '548 Patent would not need to teach the limits on where within the power plant the injection could take place

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion. Def. PFF ¶ 399 is supported by the '548 Patent, as is evident by comparing Def. PFF ¶ 399 to the '548 Patent. Plaintiffs' expert, Andrew Fry, also testified that it would make no sense to inject partially combusted coal particles back into the combustion zone as activated carbon, "[b]ecause activated carbon itself is combustible, and you would consume the material without having it perform its function." D.I. # 71, Fry Dep. 75:23–76:11. Plaintiffs' added quotations assert additional facts, but do not rebut the stated fact.

Plaintiffs do not offer any support for the proposition that the requirement "ahead of a particulate collection device" should be construed as "downstream near a particulate collection device." In fact, the plain language of those two phrases is materially different.

Plaintiffs equate the language in the '548 Patent specification describing that injection is to occur "into the ductwork" and "anywhere in between the combustion chamber 12 and particulate collection device 30" with the claim term "injecting . . . into said flue gas ahead of a particulate collection device." That supports Defendants' construction.

400. *If, after injection of the partially combusted coal particles back into the combustion zone, those particles would simply be further combusted, that would defeat the purpose of using the "thief" process (robbing partially-combusted carbon from the furnace to use its "activated" properties in treating flue gas).*

D.I. # 76, Second Wilcox Report ¶ 74.

Pl. Response: Disputed. This proposed finding is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) ("Arguments have no place in proposed findings of fact or responses to such findings."). Claim 1 of the '548 Patent clearly provides for "injecting a halogen into said flue gas." Dkt. 103, PFF ¶ 441 at Claim 1. The '548 Patent also different terminology when discussing the "coal ash solid particles," instead requiring "injecting . . . coal ash solid particles into said flue gas ahead of a particulate collection device in order to adsorb at least a portion of the mercury." *Id.* This qualifier on what portion of the flue gas the coal ash solid particles, in the context of a proper construction of the claims of the '548 patent, would certainly require that that phrase require injection of the coal ash solid particles downstream near the particulate collection devices, and not upstream in the combustion zone. The fact the claims needs a qualifier on "flue gas" to which the coal ash solid particles is to be injected in or to exclude the flue gas in the combustion zone shows, again, that "flue gas" is understood to exist in the combustion zone. Dkt. 103, PFF ¶ 442. The '548 Patent specifically teaches that the injection of coal ash from partial coal combustion is "injected into the ductwork" of the power plant "anywhere in between combustion chamber 12 and particulate collection device 30." PFF ¶ 910. Notably, unlike in the '692 Patent, the '548 Patent's specification identifies an upstream limit on the location where the injection can take place. Moreover, if "injecting into flue gas" had the special

meaning that Defendants claim, the ‘548 Patent would not need to teach the limits on where within the power plant the injection could take place.

Def. Reply: Undisputed. Def. PFF ¶ 400 is supported by the ‘548 Patent, as is evident by comparing Def. PFF ¶ 400 to the ‘548 Patent. Plaintiffs’ added quotations do not rebut the stated fact.

401. *Claim 24 of the ‘548 Patent claims “[a] method of treating coal combustion flue gas containing mercury” that requires, inter alia, “injecting” thief coal “into said flue gas ahead of a particulate collection device.”*

D.I. # 76, Second Wilcox Report ¶ 74; Mark Decl. Ex. 51, ‘548 Patent at 8:5–10.

Pl. Response: Disputed. Plaintiffs’ dispute Defendants’ proposed finding of fact as incomplete, and therefore misleading.

Claim 24 reads as follows:

A method of treating coal combustion flue gas containing mercury comprising the steps of: evaluating coal for chlorine levels; evaluating quality of thief coal; and injecting a halogen and thief coal into said flue gas ahead of a particulate collection device, in order to adsorb at least a portion of the mercury and into said flue gas when said chlorine levels and said ash quality is below a certain level.

Dkt. 90–51, Mark Decl. Ex. 51, ‘548 Patent at 8:5–10.

Def. Reply: Undisputed. Def. PFF ¶ 401 is supported by the ‘548 Patent, as is evident by comparing Def. PFF ¶ 401 to the ‘548 Patent. Plaintiffs’ added quotations do not rebut the stated fact.

402. *If a POSA were to try to apply Plaintiffs’ proposed constructions to Claim 24 of the ‘548 Patent, a POSA would understand the claim to permit extracting partially combusted particles from the combustion chamber (“thief coal”) and injecting it right back into the combustion chamber.*

D.I. # 76, Second Wilcox Report ¶ 74.

Pl. Response: Disputed. This proposed finding is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). Claim 1 of the ‘548 Patent clearly provides for “injecting a halogen into said flue gas.” Dkt. 103, PFF ¶ 441 at Claim 1. The ‘548 Patent also different terminology when discussing the “coal ash solid particles,” instead requiring “injecting coal ash solid particles into said flue gas ahead of a particulate collection device in order to adsorb at least a portion of the mercury.” *Id.* This qualifier on what portion of the flue gas the coal ash solid particles, in the context of a proper construction of the claims of the ‘548 patent, would certainly require that that phrase require injection of the coal ash solid particles downstream near the particulate collection devices, and not upstream in the combustion zone. The fact the claims needs a qualifier on “flue gas” to which the coal ash solid particles is to be injected in or to exclude the flue gas in the

combustion zone shows, again, that “flue gas” is understood to exist in the combustion zone. Dkt. 103, PFF ¶ 442. The ‘548 Patent specifically teaches that the injection of coal ash from partial coal combustion is “injected into the ductwork” of the power plant “anywhere in between combustion chamber 12 and particulate collection device 30.” PFF ¶ 910. Notably, unlike in the ‘692 Patent, the ‘548 Patent’s specification identifies an upstream limit on the location where the injection can take place. Moreover, if “injecting into flue gas” had the special meaning that Defendants claim, the ‘548 Patent would not need to teach the limits on where within the power plant the injection could take place.

Def. Reply: Undisputed. Def. PFF ¶ 402 is supported by the ‘548 Patent, as is evident by comparing Def. PFF ¶ 402 to the ‘548 Patent. Plaintiffs’ added quotations do not rebut the stated fact.

403. *The claims in Oehr’s ‘548 Patent make sense only if “injecting into flue gas” excludes injecting into the combustion zone, because, as Plaintiff’s expert witness Andrew Fry testified, it would be “nonsensical” to inject the activated carbon in to the combustion zone.*

D.I. # 76, Second Wilcox Report ¶ 73; D.I. # 74, Third Fry Report ¶ 69; D.I. # 71 Fry Dep. 103:18–104:21.

Pl. Response: Disputed. This proposed finding is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). Claim 1 of the ‘548 Patent clearly provides for “injecting a halogen into said flue gas.” Dkt. 103, PFF ¶ 441 at Claim 1. The ‘548 Patent also different terminology when discussing the “coal ash solid particles,” instead requiring “injecting coal ash solid particles into said flue gas ahead of a particulate collection device in order to adsorb at least a portion of the mercury.” *Id.* This qualifier on what portion of the flue gas the coal ash solid particles, in the context of a proper construction of the claims of the ‘548 patent, would certainly require that that phrase require injection of the coal ash solid particles downstream near the particulate collection devices, and not upstream in the combustion zone. The fact the claims needs a qualifier on “flue gas” to which the coal ash solid particles is to be injected in or to exclude the flue gas in the combustion zone shows, again, that “flue gas” is understood to exist in the combustion zone. Dkt. 103, PFF ¶ 442. The ‘548 Patent specifically teaches that the injection of coal ash from partial coal combustion is “injected into the ductwork” of the power plant “anywhere in between combustion chamber 12 and particulate collection device 30.” PFF ¶ 910. Notably, unlike in the ‘692 Patent, the ‘548 Patent’s specification identifies an upstream limit on the location where the injection can take place. Moreover, if “injecting into flue gas” had the special meaning that Defendants claim, the ‘548 Patent would not need to teach the limits on where within the power plant the injection could take place.

Def. Reply: Undisputed. Def. PFF ¶ 403 is supported by the ‘548 Patent, as is evident by comparing Def. PFF ¶ 403 to the ‘548 Patent. Plaintiffs’ added quotations do not rebut the stated fact.

404. *Because the thief coal is taken from the combustion zone, it would make no sense if injection “into said flue gas” included injection into the combustion zone—because the “thief coal” would be destroyed.*

D.I. # 76, Second Wilcox Report ¶ 74; D.I. # 71, Fry Dep. 75:9– 76:24.

Pl. Response: Disputed. This proposed finding is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”).

Plaintiffs also dispute this proposed finding of fact as it is based on a misreading of the claims of the ‘548 Patent. Claim 1 of the ‘548 Patent clearly provides for “injecting a halogen into said flue gas.” Dkt. 103, PFF ¶ 441 at Claim 1. The ‘548 Patent also different terminology when discussing the “coal ash solid particles,” instead requiring “injecting coal ash solid particles into said flue gas ahead of a particulate collection device in order to adsorb at least a portion of the mercury.” *Id.* This qualifier on what portion of the flue gas the coal ash solid particles, in the context of a proper construction of the claims of the ‘548 patent, would certainly require that that phrase require injection of the coal ash solid particles downstream near the particulate collection devices, and not upstream in the combustion zone. The fact the claims needs a qualifier on “flue gas” to which the coal ash solid particles is to be injected in or to exclude the flue gas in the combustion zone shows, again, that “flue gas” is understood to exist in the combustion zone. Dkt. 103, PFF ¶ 442. The ‘548 Patent specifically teaches that the injection of coal ash from partial coal combustion is “injected into the ductwork” of the power plant “anywhere in between combustion chamber 12 and particulate collection device 30.” PFF ¶ 910. Notably, unlike in the ‘692 Patent, the ‘548 Patent’s specification identifies an upstream limit on the location where the injection can take place. Moreover, if “injecting into flue gas” had the special meaning that Defendants claim, the ‘548 Patent would not need to teach the limits on where within the power plant the injection could take place.

Def. Reply: Undisputed. Def. PFF ¶ 404 is supported by the ‘548 Patent, as is evident by comparing Def. PFF ¶ 404 to the ‘548 Patent. Plaintiffs’ added quotations do not rebut the stated fact.

405. *The claims of the ‘548 Patent make sense only if “flue gas” excludes the combustion zone.*

D.I. # 76, Second Wilcox Report ¶ 74.

Pl. Response: Disputed. This proposed finding is argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”).

Plaintiffs also dispute this proposed finding of fact as it is based on a misreading of the claims of the ‘548 Patent. Claim 1 of the ‘548 Patent clearly provides for “injecting a halogen into said flue gas.” Dkt. 103, PFF ¶ 441 at Claim 1. The ‘548 Patent also different terminology when discussing the “coal ash solid particles,” instead requiring “injecting coal ash solid particles into said flue gas ahead of a particulate collection device in order to adsorb at least a portion of the

mercury.” *Id.* This qualifier on what portion of the flue gas the coal ash solid particles, in the context of a proper construction of the claims of the ‘548 patent, would certainly require that that phrase require injection of the coal ash solid particles downstream near the particulate collection devices, and not upstream in the combustion zone. The fact the claims needs a qualifier on “flue gas” to which the coal ash solid particles is to be injected in or to exclude the flue gas in the combustion zone shows, again, that “flue gas” is understood to exist in the combustion zone. Dkt. 103, PFF ¶ 442. The ‘548 Patent specifically teaches that the injection of coal ash from partial coal combustion is “injected into the ductwork” of the power plant “anywhere in between combustion chamber 12 and particulate collection device 30.” PFF ¶ 910. Notably, unlike in the ‘692 Patent, the ‘548 Patent’s specification identifies an upstream limit on the location where the injection can take place. Moreover, if “injecting into flue gas” had the special meaning that Defendants claim, the ‘548 Patent would not need to teach the limits on where within the power plant the injection could take place.

Def. Reply: Undisputed. Def. PFF ¶ 405 is supported by the ‘548 Patent, as is evident by comparing Def. PFF ¶ 405 to the ‘548 Patent. Plaintiffs’ added quotations do not rebut the stated fact.

D. U.S. Patent No. 4,458,803 (‘803 Patent)

406. *Oehr’s ‘803 Patent issued on October 17, 1995.*

Mark Decl. Ex 49, ‘803 Patent.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

407. *The ‘803 Patent describes “mix[ing]” a liquor with coal “prior to combustion” or “inject[ing] directly into the flue, subsequent to combustion.”*

Mark Decl. Ex 49, ‘803 Patent at 5:5–8, 5:17–18; D.I. 75, First Wilcox Report ¶ 108.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact as it mischaracterizes the ‘803 Patent. The ‘803 Patent is directed to a liquor additive to inject into a flue gas. The specification of the ‘803 Patent explains that the preferred way of accomplishing this is to incorporate the liquor into the fuel, but that the liquor could also be injected into the “flue” (without providing a specific location in the “flue”). Dkt. 90–49, Mark Decl. Ex 49, ‘803 Patent at ‘803 Patent, 1:6-9; 3:5-7.

Dr. Fry testified that a POSA would understand two things from the disclosure of the ‘803 Patent: (1) adding an additive to fuel can accomplish injecting into flue gas, and (2) injecting into a “flue” can accomplish injecting into flue gas. Dr. Fry further explained that the ‘803 Patent does not specify precisely where in the “flue” the injection could occur because one of ordinary skill in the art would understand how to select a location. However, the ‘803 Patent does indicate that the language “introducing into a flue gas” can be accomplished by adding an additive to fuel. Dkt. 73, Second Fry Report, ¶ 160; Dkt. 90–49, Mark Decl. Ex 49, ‘803 Patent at ‘803 Patent at 2:64-3:7.

Def. Reply: Undisputed. Def. PFF ¶ 407 is supported by the ‘803 Patent, as is evident by comparing Def. PFF ¶ 407 to the ‘803 Patent. Plaintiffs’ added quotations do not rebut the stated fact. Further, Plaintiff’s reference to Fry’s testimony is irrelevant to Def. PFF ¶ 407.

E. U.S. Patent No. 5,645,805 (‘805 Patent)

408. *Oehr’s ‘805 Patent issued on July 8, 1997.*

Mark Decl. Ex 50, ‘805 Patent.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

409. *The ‘805 Patent specifies the following regarding an alkaline additive: Preferably the above mentioned additive is incorporated into the fuel but the additive containing the thermolabile compound may be injected into either the combustion zone or the flue.*

Mark Decl. Ex 50, ‘805 Patent at 5:46–50; D.I. # 76, Second Wilcox Report ¶ 72.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact to the extent it mischaracterizes the “above mentioned additive” being used in the ‘805 Patent. In particular, the ‘805 Patent states the following:

“The present invention seeks to use hydrophobic/hydrophilic organic alkaline earth metal salt mixtures. For example those containing calcium. to reduce acid emissions. The invention does not exclude aliphatic carboxylic acids, calcium salts of alcohols (calcium alkoxides including calcium phenoxides), non-hydrophilic calcium salts such as calcium phenoxides and non-alkalitratable organics in the calcium salt mixture such as ketones, carbohydrates and low molecular weight alcohols.”

Dkt. 90–50, Mark Decl. Ex 50, ‘805 Patent at 5:23–32.

The ‘805 Patent explains that there are several ways of introducing treatment chemicals into a flue, including adding an additive to the coal, injecting it into the combustion zone, or injecting it into the flue. Dkt. 103, PFF ¶ 440.

Def. Reply: Undisputed. Def. PFF ¶ 409 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 409 to the ‘805 Patent. Plaintiffs’ added quotations do not rebut the stated fact.

410. *The ‘805 Patent described different methods in which a thermolabile additive “is incorporated into the fuel,” “injected into the flue,” or “injected into the fuel combustion zone.”*

Mark Decl. Ex 50, ‘805 Patent at 5:46–50, 10:27, 10:31; D.I. # 76, Second Wilcox Report ¶ 72.

Pl. Response: Disputed. Defendants proposed finding of fact appears to be mischaracterizing the '805 Patent. The '805 Patent explains that there are several ways of introducing treatment chemicals into a flue, including adding an additive to the coal, injecting it into the combustion zone, or injecting it into the flue. *See, e.g.,* Dkt. No. 90-50, Mark Decl. Ex 50, '805 Patent at 5:46–50; Dkt. 103, PFF ¶ 440.

The claims of the '805 Patent further support this:

Claim 2. A method as claimed in claim 1 in which the thermolabile additive is incorporated into the fuel.

Claim 3. A method as claimed in claim I in which the thermolabile additive is injected into the flue.

Claim 4. A method as claimed in claim I in which the thermolabile additive is injected into the fuel combustion zone.

Dkt. No. 90-50, Mark Decl. Ex 50, '805 Patent at claims 2–4.

Def. Reply: Undisputed. Def. PFF ¶ 410 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 410 to the '805 Patent. Plaintiffs' added quotations do not rebut the stated fact.

411. *If a POSA were to try to apply Plaintiffs' constructions to the '805 Patent, the statement that the "additive is incorporated into the fuel but the additive containing the thermolabile compound may be injected into either the combustion zone or the flue" would not make sense to a POSA, because "incorporation in the fuel" would be rendered superfluous by "injection into the combustion zone."*

D.I. # 76, Second Wilcox Report ¶ 72.

Pl. Response: Disputed. The proposed fact is argumentative and states a legal conclusion. *American National Property & Cas. Co. v. Graham*, No. 04-C-1185, 2006 U.S. Dist. LEXIS 41235 at *3-4 (E.D. Wis. June 2, 2006) (legal conclusions inappropriate as factual findings; such advocacy must be left to the argument portion of a brief and not proposed as a finding of fact); "Arguments have no place in proposed findings of fact or responses to such findings." *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007).

Plaintiffs dispute the proposed finding of fact for the reasons discussed in Plaintiffs' Opposition Brief at Section II(D)(7).

Dr. Fry testified that "the '805 Patent's disclosure is consistent with my opinion that a POSA would have known at the time of the '692 Patent application that there was more than one way for an additive to be injected. Specifically, the '805 Patent states that an additive can be incorporated into the fuel, injected into the combustion zone, or injected in the flue gas further downstream."

Dkt. No. 74, Third Fry Report, ¶ 68; Dkt. No. 90-50, Mark Decl. Ex 50, '805 Patent at 5:46–50; Dkt. 103, PFF ¶ 440.

Def. Reply: Undisputed. Plaintiffs' response fails to raise a genuine issue of material fact regarding Def. PFF ¶ 411. Plaintiffs' attempt to dispute this fact by relying on the Third Fry Report (¶ 68) is unavailing, because Fry relies on a premise that is belied by the record. Interpreting the patent as Fry describes would render sections of the '805 Patent superfluous. The response also asserts an additional fact, but does not contradict the stated fact.

F. Oehr's November 2001 Provisional Patent Application

412. *Oehr filed a provisional patent application with the U.S. Patent and Trademark Office in November of 2001, before he filed the application for the '692 Patent.*

Mark Decl. Ex. 159, Provisional Patent Application, at NALC00369835.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

413. *Oehr described one methodology for adding a halide salt by "spray[ing] . . . an aerosol into the cold section of a coal combustor (e.g. post superheater section)."*

Mark Decl. Ex. 159, Provisional Patent Application, at NALC00369839.

Pl. Response: Disputed. Defendants' proposed fact is vague with respect to "one methodology for adding a halide salt." Further disputed for mischaracterizing the referenced testimony. For example, the Provisional Patent Application states at the cited section:

Concept A: Sub-bituminous Coal (e.g. Powder River Coal) Case Fire a low level of a halogen such as a halide salt (e.g. dilute aqueous solution) sprayed for example as an aerosol into the cold section of a coal combustor (e.g. post superheater section} in the presence or absence of a halide oxidation catalyst or catalyst precursor to effect enhanced elemental mercury oxidation to a mercuric halide (e.g. mercuric chloride, mercuric bromide or mercuric Iodide) susceptible to complexation with alkaline sub-bituminous coal ash, and/or Pass ESP or baghouse flue gas through sub-bituminous coal bottom ash to effect elemental mercury absorption on unburned carbon in the bottom ash and extra oxidized mercury (e.g. mercuric halide} adsorption on the alkaline bottom ash. Dkt. 90–161, Mark Decl. Ex. 159, Provisional Patent Application, at NALC00369839.

The evidence makes clear that when Oehr's provisional patent application refers to the example of injecting a halogen compound into the post-superheater region of a power plant, it refers to it as "fir[ing] into the cold section of a coal combustor" and "fir[ing] . . . into the post superheater section of a coal combustor." PFF ¶¶ 908, 909.

Def. Reply: Undisputed. Def. PFF ¶ 413 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 413 to the Provisional Patent Application. Plaintiffs' added evidence does not rebut the stated fact.

414. *Oehr thereafter provides a contrasting treatment methodology based on applying chemicals to coal prior to combustion: “It may be possible to apply the aerosols to the coal itself either ahead of or at the coal pulverizer.”*

Mark Decl. Ex. 159, Provisional Patent Application, at NALC00369840.

Pl. Response: Disputed. Defendants’ proposed fact is vague with respect to “provides a contrasting treatment methodology.” The referenced evidence does not support this statement. The evidence makes clear that when Oehr’s provisional patent application refers to the example of injecting a halogen compound into the post-superheater region of a power plant, it refers to it as “fir[ing] into the cold section of a coal combustor” and “fir[ing] ... into the post superheater section of a coal combustor.” PFF ¶¶ 908, 909.

Def. Reply: Undisputed. Def. PFF ¶ 414 is supported by the record as evidenced by comparing Def. PFF ¶ 414 to the Provisional Patent Application. Plaintiffs’ added citation is irrelevant to the PFF.

415. *Oehr also notes that pretreatment by halogen salts may be used in conjunction with another coal additive: “Finally, halogen salts with the ability to oxidize mercury could be added to the [coal] additive described in [his ’235 Patent].”*

Mark Decl. Ex. 159, Provisional Patent Application, at NALC00369841.

Pl. Response: Disputed. Defendants have mischaracterized the reference testimony, as the referenced testimony does not refer to “pretreatment by halogen salts,” as alleged in Defendants’ proposed fact.

Def. Reply: Undisputed. Def. PFF ¶ 415 does not mischaracterize the record as evidenced by comparing Def. PFF ¶ 415 to the Provisional Patent Application. Plaintiffs’ assertion that the application does not use the words “pretreatment by halogen salts” is irrelevant because Defendants do not allege that those exact words are used.

416. *The descriptions in Oehr’s provisional application are thus consistent with the idea that POSAs at or about 2002 understood that there were distinct categories of methods for adding substances to coal-burning power plants for the purpose of controlling emissions.*

D.I. # 76, Second Wilcox Report ¶ 71.

Pl. Response: Disputed. As stated in his report, Dr. Fry opined that the provisional application gives two examples of where a halogen source could be added to the system. However, although the provisional application provides examples, it does not let a POSA know whether there are limits on where the introduction can take place.

Dkt. 73, Second Fry Report, ¶ 167.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the cited materials do not contradict the stated fact they simply add an irrelevant fact.

417. *Oehr's November 2001 provisional patent application was never published in connection with the prosecution of the '692 Patent or cited as the basis for a priority date during the prosecution of the patent.*

D.I. # 35-1, '692 Patent; [REDACTED]

Pl. Response: Disputed. This proposed finding of fact is vague in its use of the phrase “never published in connection with the prosecution of the '692 Patent” and therefore is ambiguous and unclear as phrased and is disputed for that reason.

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact. Plaintiffs' objection to “never published in connection with the prosecution of the '692 Patent” is immaterial.

XII. JULIEN

A. Anticipation

418. *Julien was published in the journal FUEL and was available in the United States in 1996.*

Mark Decl. Ex. 186, S. Julien et al., The effect of halides on emissions from circulating fluidized bed combustion of fossil fuels, 75 FUEL 1655 (1996) (“Julien”); D.I. # 75, First Wilcox Report ¶ 108.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

419. *Julien is a prior art publication to the '692 Patent under 35 U.S.C. § 102(b).*

Mark Decl. Ex. 186, Julien at DEFS-0000226; D.I. # 75, First Wilcox Report ¶ 122.

Pl. Response: Disputed. As phrased, this proposed finding of fact suggests that Julien anticipates the '692 Patent, which is a legal conclusion (which Plaintiffs have disputed with overwhelming evidence), and not a fact.

Def. Reply: Undisputed. Plaintiffs do not dispute Def. PFF ¶ 418 or the date of the '692 Patent, and therefore Julien is a prior art publication; moreover, they cite no evidence for why Julien should not be considered a prior art publication.

420. *Julien discloses experiments that analyze the effect on coal combustion flue gas of the introduction of HCl or CaBr₂ into the combustion zone of a coal combustor.*

Mark Decl. Ex. 186, Julien at DEFS-0000226; D.I. # 75, First Wilcox Report ¶ 139.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

421. *One of the focuses of the Julien paper was the emissions of SO_x (primarily SO₂).*

Mark Decl. Ex. 186, Julien at DEFS-0000226-27.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

422. *Julien teaches the injection of CaBr₂ into the combustion zone of a coal combustor.*

Mark Decl. Ex. 186, Julien at DEFS-0000227-29; D.I. # 75, First Wilcox Report ¶ 139.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

423. *The solutions of calcium bromide used in Julien were injected using a peristaltic pump into the riser 1.3 m above the distributor through a 6.3 mm diameter tube penetrating into the centerline of the combustor.*

Mark Decl. Ex. 186, Julien at DEFS-0000227-29; D.I. # 75, First Wilcox Report ¶ 139.

Pl. Response: Undisputed, to the extent the finding only supports to indicate what the Julian article states.

Def. Reply: Undisputed.

424. *The injection in Julien is into a combustion chamber operating between 838 and 856 °C, and eventually results in flue gas that is cooled further using flue gas coolers.*

Mark Decl. Ex. 186, Julien at DEFS-0000228–230.

Pl. Response: Disputed. The cited evidence does not support this proposed finding of fact with respect to the temperature range identified. Mark Decl. Ex. 186, Julien, Tables 4– 5 at DEFS-0000230. Julien indicates that the range of temperatures in the combustion chamber is from 835-869°C. Id. Dr. Fry opined that the temperature range in the reactor indicated in Julien is from 835-869°C. Dkt. 73, Fry Second Report, ¶ 198; Dkt. 71, Fry Dep. 66:7-16. Julien does not disclose temperatures after “flue gas coolers” and the proposed finding of fact is vague in its use of the phrase “cooled further.”

Def. Reply: Undisputed. Def. PFF ¶ 424 is supported by the cited evidence. To clarify, the temperature of the combustion zone is between 838 and 856°C for the relevant experiments in Julien, *i.e.* those experiments involving the injection of CaBr₂. D.I. # 90-173, Mark Decl. Ex. 186, Julien, at DEFS-0000229–230. Plaintiffs’ alternative temperature range erroneously includes experiments that did not involve the injection of CaBr₂. Further, Def. PFF ¶ 424 does not state that Julien discloses

temperatures after “flue gas coolers.” A flue gas cooler lowers the temperature of flue gas. *See* D.I. # 71, Fry Dep. 259:10–260:16. Fry also testified that flue gas would typically be cooled to around 177 °C [350 °F], which is the temperature at which a baghouse operates.” *Id.* 260:17-261:5.

425. *Under Plaintiffs’ construction of “injection/injecting” and “flue gas,” Julien discloses injecting calcium bromide into the flue gas.*

D.I. # 71, Fry Dep. 16:16-20; D.I. # 75, First Wilcox Report ¶ 142.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

426. *Julien discloses that oxygen is present in the system.*

Mark Decl. Ex. 186, Julien, Tables 4–5, at DEFS-0000230.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

427. *Julien explicitly discloses that alkaline solid particles are present in advance of a particulate collection device.*

Mark Decl. Ex. 186, Julien at DEFS-0000228 (listing alkaline compounds such as CaO and MgO present in the fly ash particles); D.I. # 75, First Wilcox Report ¶¶ 150–152.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

428. *Julien was identified on an information disclosure statement during the reexamination of the ’692 Patent, but was never discussed by any party during the reexamination.*

D.I. # 35-8, Utility Patent Application No. 10/073986 (Feb. 14, 2002), at 491.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

429. *In Julien, the fly ash particles generated from the coal combustion contain significant amounts of alkaline chemicals, and are alkaline solid particles.*

Mark Decl. Ex. 186, Julien at DEFS-0000229; D.I. # 75, First Wilcox Report ¶ 144.

Pl. Response: Disputed. Plaintiffs object to the proposed finding of fact is vague in its use of the phrase “significant amounts.” Neither the Julien reference not the paragraph referenced from Dr. Wilcox’s First Report refer to “significant amounts.” To the extent this proposed finding of fact is intended to relate to the “alkaline solid particles” in the claims of the ’692 Patent, which adsorb mercuric bromide, Dr. Fry has opined that Julien does not disclose that claim element. Dkt. 73, Fry Second Report, ¶ 208.

Def. Reply: Undisputed that the fly ash particles generated from the coal combustion contain alkaline chemicals, and are alkaline solid particles. Further, Plaintiffs have not cited evidence that disputes the stated fact. Def. PFF ¶ 429 does not state that Julien discloses the stated phenomenon as a “claim element.”

430. *The coal used in Julien, which was combusted to form the coal fly ash particles, is subbituminous coal.*

Mark Decl. Ex. 186, Julien at DEFS-0000229; D.I. # 75, First Wilcox Report ¶ 148.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

431. *The Julien coal contained alkali flux compounds, including iron oxide and aluminum oxide.*

Mark Decl. Ex. 186, Julien, Table 2, at DEFS-0000228; D.I. # 75, First Wilcox Report ¶ 149.

Pl. Response: Disputed. The experts have offered opposing opinions on whether Julien discloses an alkali flux. Dr. Fry has opined that as the phrase is used in the ’692 Patent, the alkali flux “is something that is added to the system, as opposed to something that occurs naturally in the coal.” Dkt. 73, Fry Second Report, ¶ 212. Dr. Fry opined that Julien does not disclose an alkali flux. Dkt. 73, Fry Second Report, ¶ 212.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Undisputed that the Julien coal contains iron oxide and aluminum oxide, which are alkali flux compounds. Plaintiffs’ legal argument that this disclosure does not disclose an element of the ’692 Patent is immaterial to this PFF, and facially belied by Julien. *See* D.I. # 90-173, Mark Decl. Ex. 186, Julien, Table 2, at DEFS-0000228; D.I. # 75, First Wilcox Report ¶ 149.

432. *Julien teaches that decomposition of CaBr_2 leads to CaO , which is a component of the alkaline solid particles.*

Mark Decl. Ex. 186, Julien at DEFS-0000228, DEFS-0000232– 233.

Pl. Response: Disputed. Plaintiffs object to this proposed finding of fact as vague in its use of the phrase “the alkaline solid particles.” The proposed finding

of fact does not identify what “the alkaline solid particles” refers to. To the extent this proposed finding of fact purports to refer to the “alkaline solid particles” in the claims of the ‘692 Patent, which adsorb mercuric bromide, Dr. Fry has opined that Julien does not disclose that claim element. Dkt. 73, Fry Second Report, ¶ 208.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Plaintiffs do not dispute that Julien teaches that decomposition of CaBr_2 leads to CaO , which is a component of alkaline solid particles. Plaintiffs’ legal argument that this disclosure does not disclose an element of the ‘692 Patent is immaterial to this PFF, and facially belied by Julien. See D.I. # 90-173, Mark Decl. Ex. 186, Julien, at DEFS-0000228, DEFS-0000232– 233.

433. *Julien discloses the addition of lime, CaO , to the combustion system.*

Mark Decl. Ex. 186, Julien at DEFS-0000226 (discussing the “surface modification of CaO particles”), –233 (“The coalescence of sorbent grains increased drastically the grain size and decreased the surface area of the CaO particles.”); D.I. # 75, First Wilcox Report ¶¶ 144–153.

Pl. Response: Disputed. Plaintiffs object to this proposed finding of fact as vague and ambiguous in its use of the term “addition.” Julien discloses the injection of CaBr_2 and the injection of HCl . It does not disclose injection of CaO . It discloses that CaO may be generated from the decomposition of CaBr_2 and therefore may be present in the system, but to the extent the term “addition” suggests something that was injected, this proposed finding of fact is unsupported by the cited evidence. The referenced quote is in a paragraph where Julien is discussing a different reference, not the Julien system. The relevant paragraph reads:

“Morphological change in CaO particles reacting with HCl was observed by Gullet et al. [Gullet, B.K., Jozewicz, W. and Stefanski, L.A. Ind. Eng. Chem. Res. 1992, 31, 2437]. SEM analysis showed that the granular sorbent particles coalesced and formed more highly ordered, crystalline structures as the formation of CaCl_2 increased. The coalescence of sorbent grains increased drastically the grain size and decreased the surface area of the CaO particles. A decrease in the surface area of calcium oxide particles present in ash has the potential to decrease the sulfur capture. These results are consistent with the observed SO_2 emissions.”

Mark Decl. Ex. 186, Julien at DEFS-0000233.

This passage does not indicate that there was “addition of lime, CaO , to the combustion system.

Def. Reply: Undisputed. Plaintiffs do not dispute that CaO is formed in the system. Further, Plaintiffs’ assertion that the evidence cited by Defendants “does not indicate that there was ‘addition of lime, CaO , to the combustion system[.]’” is belied by Julien’s text. Julien states:

Two major reactions are: (i) oxidation (to some extent catalyzed by CaO) of volatile nitrogen to NO at the base of the reactor; (ii) **reduction of NO by CO throughout the reactor, again catalyzed by CaO**. . . . In general, **CaO addition** may decrease NO_x emission for low-volatile fuels but increase it for high-volatile fuels D.I. # 90-173, Mark Decl. Ex. 186, *Julien*, at DEFS-0000233 (emphases added).

434. *Lime (CaO) is a flue gas desulphurization solid.*

Mark Decl. Ex. 186, Julien at DEFS-0000226 (discussing the “surface modification of CaO particles”), –233 (“The coalescence of sorbent grains increased drastically the grain size and decreased the surface area of the CaO particles.”); D.I. # 75, First Wilcox Report ¶¶ 144–153.

Pl. Response: Disputed. Plaintiffs object to the proposed fact as overbroad and therefore ambiguous in its meaning, and not true under all conditions. Whether lime behaves as a flue gas desulphurization solid depends on the context. The cited evidence does not support this proposed finding of fact as written. The cited portion of *Julien* teaches that the CaO particles, in the *Julien* system, are not effective at removing sulfur species from the flue gas. Mark Decl. Ex. 186, *Julien* at DEFS-0000233. The record contains evidence that disputes this proposed finding of fact. Dr. Fry, opined:

“*Julien* independently does not disclose the ‘flue gas desulphurization (FGD) solids’ element. In my opinion, the experiments performed by *Julien* are not attempts to “desulfurize” flue gas, and in fact *Julien* teaches that the injection of CaBr₂ is not effective at desulfurizing flue gas. I would not characterize anything used in *Julien* as “flue gas desulphurization solids.” Moreover, contrary to Dr. Wilcox’s statement, in my opinion, a POSA would not consider fly ash to be a “desulfurization solid.”

Dkt. 73, Fry Second Report, ¶ 214.

Def. Reply: Undisputed. Undisputed that lime (CaO) is a flue gas desulphurization solid. Further, Plaintiffs’ response does not meet the substance of Def. PFF ¶ 434. Plaintiffs’ suggestion that *Julien* teaches that the CaO particles, in the *Julien* system, are not effective at removing sulfur species from the flue gas, is vague. *Julien* teaches that the CaO particles do capture sulfur, but to vary degrees based on the surface area of the CaO particles. D.I. # 90-173, Mark Decl. Ex. 186, *Julien*, at DEFS-0000233.

435. *The use of lime to treat combustion emissions was routine practice at the time the ’692 Patent was filed.*

D.I. # 71, Fry Dep. 91:10–20; D.I. #75, First Wilcox Report ¶¶ 153, 155.

Pl. Response: Disputed. The cited evidence does not support this proposed finding of fact. Dr. Fry testified that furnace sorbent injection of sorbents such as calcium oxide were known for Sulphur capture. Dkt. 71, Fry Dep. 91:10–20. This testimony does not indicate that the use of lime “to treat combustion emission” was “routine.” The testimony cited does not show that use of lime was routine, not that it treated combustion emissions generally. Neither of the

paragraphs cited from Dr. Wilcox's First Report indicate that use of lime was "routine" or that it was used to treat "combustion emissions" generally. Dkt. 75, First Wilcox Report 153, 155.

Def. Reply: Undisputed. Undisputed that lime was used to treat combustion emissions at the time of the patent filing. The response asserts an additional fact, but does not contradict the stated fact. Rather, in addition to testifying "that furnace sorbent injection of sorbents such as calcium oxide were known for Sulphur capture," Fry also testified, as Defendants' PFF makes clear, that "hydrated lime" was used as a "[f]urnace sorbent injection" "for sulphur capture." D.I. # 71, Fry Dep. 91:10–20. Additionally, Plaintiffs' assertion that "[n]either of the paragraphs cited from Dr. Wilcox's First Report indicate that use of lime was 'routine' or that it was used to treat 'combustion emissions' generally" is belied by the record. Paragraph 155 of the First Wilcox Report states:

Onizuka [a patent published in 1990] discloses that its method is useful for "effectively removing sulfur oxides (SOx) from combustion flue gases discharged from various types of boilers, combustion furnaces, refuse incinerators, and the like, thereby serving to reduce atmospheric environmental pollution."

D.I. #75, First Wilcox Report ¶ 155.

436. *The experiments Julien describes include the injection of CaBr₂ into a combustion chamber that operates between 838 and 856 °C.*

Mark Decl. Ex. 186, Julien, Tables 4–5, at DEFS-0000228–230.

Pl. Response: Disputed. The cited evidence does not support this proposed finding of fact with respect to the temperature range identified. Mark Decl. Ex. 186, Julien, Tables 4–5 at DEFS-0000230. Julien indicates that the range of temperatures in the combustion chamber is from 835-869°C. *Id.* Dr. Fry opined that the temperature range in the reactor indicated in Julien is from 835-869°C. Dkt. 73, Fry Second Report, ¶ 198; Dkt. 71, Fry Dep. 66:7-16.

Def. Reply: Undisputed. Def. PFF ¶ 436 is supported by the cited evidence. To clarify, the temperature of the combustion zone is between 838 and 856°C for the relevant experiments in Julien, i.e. those experiments involving the injection of CaBr₂. D.I. # 90-173, Mark Decl. Ex. 186, Julien, at DEFS-0000229–230. Plaintiffs' alternative temperature range erroneously includes experiments that did not involve the injection of CaBr₂. Further, Def. PFF ¶ 424 does not state that Julien discloses temperatures after "flue gas coolers." A flue gas cooler lowers the temperature of flue gas. *See* D.I. # 71, Fry Dep. 259:10–260:16. Fry also testified that flue gas would typically be cooled to around to around 177 °C [350 °F], which is the temperature at which a baghouse operates." *Id.* 260:17-261:5.

437. *According to the calcium bromide experiments disclosed in Julien, upon leaving the combustion zone, the flue gas proceeds through a primary cyclone*

(temperatures of 836–850 °C) and through a secondary cyclone (temperatures of 809–820 °C).

Mark Decl. Ex. 186, Julien, Tables 4–5, at DEFS-0000227–230.

Pl. Response: Disputed. The cited evidence does not support the proposed finding of fact. The cited evidence indicates temperature range of the primary cyclone in the tests was 836-861°C. Mark Decl. Ex. 186, Julien, Tables 4–5 at DEFS-0000230. It indicates that the temperature range in the secondary cyclone in the tests was 807-827°C. Mark Decl. Ex. 186, Julien, Tables 4–5 at DEFS-0000230.

Def. Reply: Undisputed. Def. PFF ¶ 437 is supported by the cited evidence. To clarify, the temperature of the combustion zone is between 838 and 856°C for the relevant experiments in Julien, i.e. those experiments involving the injection of CaBr₂. D.I. # 90-173, Mark Decl. Ex. 186, Julien, at DEFS-0000229–230. Plaintiffs’ alternative temperature range erroneously includes experiments that did not involve the injection of CaBr₂. Further, Def. PFF ¶ 424 does not state that Julien discloses temperatures after “flue gas coolers.” A flue gas cooler lowers the temperature of flue gas. *See* D.I. # 71, Fry Dep. 259:10–260:16. Fry also testified that flue gas would typically be cooled to around to around 177 °C [350 °F], which is the temperature at which a baghouse operates.” *Id.* 260:17-261:5.

438. *In the CaBr₂ experiments in Julien, after flue gas passes through the secondary air cyclone (at temperatures of 809–820 °C), it goes through a secondary heat air heater and two separate flue gas coolers, each of which lowers the temperature of the flue gas further before it reaches the baghouse, which is a fabric particulate filter that would catch fire unless the gas was sufficiently cooled.*

Mark Decl. Ex. 186, Julien at DEFS-0000227–230, Figure 1, Tables 4 and 5; D.I. # 71, Fry Dep. 257:6–16.

Pl. Response: Disputed. The materials being relied on to support Defendants’ proposed finding of fact have been mischaracterized. For example, none of the referenced materials discloses “temperatures of 809–820 °C” as asserted by Defendants’ proposed finding of fact. Dkt. 90–173, Mark Decl. Ex. 186, Julien at DEFS-0000227–230, Figure 1, Tables 4 and 5; Dkt. 71, Fry Dep. 257:6–16.

Def. Reply: Undisputed. Def. PFF ¶ 438 does not mischaracterize the cited evidence. To clarify, the temperature of the combustion zone is between 838 and 856°C for the relevant experiments in Julien, i.e. those experiments involving the injection of CaBr₂. D.I. # 90-173, Mark Decl. Ex. 186, Julien, at DEFS-0000229–230. Plaintiffs’ alternative temperature range erroneously includes experiments that did not involve the injection of CaBr₂. Further, Def. PFF ¶ 424 does not state that Julien discloses temperatures after “flue gas coolers.” A flue gas cooler lowers the temperature of flue gas. *See* D.I. # 71, Fry Dep. 259:10–260:16. Fry also testified that flue gas would typically be cooled to around to around 177 °C [350 °F], which is the temperature at which a baghouse operates.” *Id.* 260:17-261:5.

439. *Some Br₂ will necessarily form, and it will necessarily lead to some mercuric bromide which is adsorbed onto the alkaline fly ash in Julien, before being removed by Julien's bag filter.*

D.I. # 75, First Wilcox Report ¶ 143; D.I. # 77, Third Wilcox Report ¶¶ 21–29.

Pl. Response: Disputed. The proposed finding of fact is directly contradicted by Plaintiffs' evidence, including the opinions of Dr. Fry and Dr. Niksa. Both Dr. Fry and Dr. Niksa have opined that molecular bromine is not necessarily and inevitably formed in Julien, and that even if there were molecular bromine formed in Julien, it would not necessarily and inevitably lead to mercuric bromide. Dr. Fry has also opined that even if there were mercuric bromide formed in Julien, it would not necessarily and inevitably have been adsorbed onto alkaline fly ash. Dkt. 73, Fry Second Report, ¶¶ 192-208; Dkt. 71, Fry Dep. 165:20-166:22; 169:1-172:2; Dkt. 70-1, Rebuttal Expert Report of Dr. Stephen Niksa, ¶¶ 14-25.

Def. Reply: Undisputed. Plaintiffs' statement is argumentative and states a legal conclusion, and the response does not contradict the stated fact. Plaintiffs' response is disputed by statements by the Patent Owner in the PTAB appeal. D.I. # 108, Def. PFF ¶ 247. Moreover, the cited evidence does not support Plaintiffs' stated additional facts and, to the extent Plaintiffs' response relies on the Rebuttal Expert Report of Dr. Stephen Niksa, it relies upon inadmissible evidence, because Niksa was not timely disclosed as an expert witness. D.I. # 87, Def. Opp. to Pl. Motion for Leave to Designate Dr. Stephen A. Niksa. Finally, Plaintiffs' assertions that "molecular bromine is not necessarily and inevitably formed in Julien, and that even if there were molecular bromine formed in Julien, it would not necessarily and inevitably lead to mercuric bromide" and "even if there were mercuric bromide formed in Julien, it would not necessarily and inevitably have been adsorbed onto alkaline fly ash" are not supported by sufficient facts or data, as explained in the Second and Third Wilcox Reports.

440. *Julien discloses that the coal combustion system used for the experiments included a baghouse, which is particulate collection device.*

Mark Decl. Ex. 186, Julien, Figure 1, at DEFS-0000228; D.I. # 75, First Wilcox Report ¶ 145.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

441. *An electrostatic precipitator is an obvious variation of a particulate collection device.*

D.I. # 75, First Wilcox Report ¶¶ 208-09; Mark Decl. Ex. 141, James D. Kilgroe et. al., U.S. ENVIRONMENTAL PROTECTION AGENCY, EPA-600/R-01-109, CONTROL OF MERCURY EMISSIONS FROM COAL-FIRED ELECTRIC UTILITY BOILERS: INTERIM REPORT (2001), at 3-7.

Pl. Response: Disputed. As phrased, the proposed finding of fact does not reflect a fact but rather a legal conclusion as to obviousness. In addition, the proposed fact (legal conclusion) is over broad because it provides no information about the context in which the electrostatic precipitator is “an obvious variation of” a particular collection device. Plaintiffs’ evidence contradicts the contention stated in the proposed finding of fact. Dr. Fry opined that it would not be obvious to use an electrostatic precipitator instead of the baghouse filter in the system described in Julien. Dkt. 73, Fry Second Report, ¶ 287.

Def. Reply: Undisputed. Def. PFF ¶ 441 is not a legal conclusion, but rather a statement of fact. Plaintiffs cite additional facts, but they do not dispute the stated fact. Finally, Plaintiffs’ assertion that “it would not be obvious to use an electrostatic precipitator instead of the baghouse filter in the system described in Julien” is not supported by sufficient facts or data, as explained in the First Wilcox Report and Kilgroe.

442. *Julien examined the effect of the addition of halides (chloride and bromide) to the flue gas produced from the combustion of Highvale coal.*

Mark Decl. Ex. 186, Julien at DEFS-0000227.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

B. Obviousness

443. *A POSA would be motivated to combine Julien and the '235 Patent to achieve the benefits of desulphurization and reduction of nitrogen oxide emissions, and would have a reasonable expectation of success in doing so.*

D.I. # 75, First Wilcox Report ¶ 207.

Pl. Response: Disputed. The parties’ experts have offered opposing opinions on this issue. Dr. Fry has opined that a POSA would not be motivated to combine Julien with the '235 Patent and in fact would want to avoid that combination. Dkt. 73, Fry Second Report, ¶ 286.

Def. Reply: Undisputed. Plaintiffs’ response fails to raise a genuine issue of material fact regarding this PFF. Plaintiffs’ attempt to dispute this fact by relying on the Fry Second Report, ¶ 286, is unavailing because Fry admits that Julien teaches that calcium bromide has some effect on NOx removal.

444. *A POSA at the time of the '692 Patent application would have found it an obvious variation to add an FGD containing a liquid to the Julien setup, as such systems were in common use and known to be effective at desulphurization, which was a stated goal of the Julien article.*

D.I. # 75, First Wilcox Report ¶ 210.

Pl. Response: Disputed. As phrased, the proposed finding of fact does not reflect a fact but rather a legal conclusion as to obviousness. Furthermore, the proposed fact is not supported by the cited evidence. The cited paragraph of Dr. Wilcox's report does not say that it would have been obvious to use an FGD containing a liquid in the system of Julien. Rather, Dr. Wilcox opined that it would have been obvious to use the calcium bromide in Julien in an existing system that had an FGD containing a liquid. Dkt. 73, Fry Second Report, ¶ 288. As Dr. Fry explained, that is not the proper analysis. Id.

Def. Reply: Undisputed. Def. PFF ¶ 444 is supported by the cited evidence. Paragraph 210 of the First Wilcox Report states that the element would be obvious in light of "Julien in combination with Kilgroe, and/or the background knowledge of a POSA" and explains that FGD systems were known. It additionally states:

It would have been obvious to a POSA to add CaBr₂, as taught by Julien, to a system using a wet FGD system, whereby particulate matter removed is passed through the FGD containing a liquid. A POSA would have been motivated to apply the teachings of Julien relating to the addition of CaBr₂ to improve the desulfurization and oxidized mercury adsorption properties of particles for existing coal-fired utility plants, including those using a wet FGD system.

D.I. # 75, First Wilcox Report ¶ 210. Accordingly, Dr. Fry's criticism is also inapposite.

445. *Use of solid alkaline particles in cementitious products would be the obvious and expected use of the collected particles in Julien.*

D.I. # 75, First Wilcox Report ¶ 154 (citing Helmuth).

Pl. Response: Disputed. As phrased, the proposed finding of fact does not reflect a fact but rather a legal conclusion as to obviousness. Moreover, Dr. Fry has opined that the alkaline solid particles in the system described by Julien would not be suitable for cementitious products, and this opinion directly contradicts the proposed finding of fact. Dkt. 73, Fry Second Report, ¶ 217.

Def. Reply: Undisputed. Def. PFF ¶ 445 is not a legal conclusion, but rather a statement of fact. Further, Plaintiffs' response fails to raise a genuine issue of material fact regarding this PFF. Plaintiffs' attempt to dispute this fact by relying on the Fry Second Report, ¶ 217, is unavailing because Fry does not provide support or specificity for his assertion.

446. *Plaintiffs' expert witness, Andrew Fry, does not apply any cutoff or standard under which he decides that the fly ash in Julien is not suitable or would not be used in cementitious products.*

D.I. # 73, Second Fry Report ¶ 217.

Pl. Response: Disputed. Dr. Fry identified the basis for his opinion that the alkaline particles in Julien are not suitable for cementitious products. He identified the issue as being due to the unburned carbon in the fly ash. Dkt. 73, Fry Second Report, ¶ 217. Dr. Fry also explained why the fly ash would have too much unburned carbon. He explained that the type of combustion system used in

the Julien system, a circulating fluidized bed combustor, is expected to have a substantial amount of unburned carbon, and cited a reference on the topic. Dkt. 73, Fry Second Report, ¶ 197.

Def. Reply: Undisputed. Plaintiffs' response fails to raise a genuine issue of material fact regarding this PFF. Plaintiffs' attempt to dispute this fact by relying on the Fry Second Report, ¶¶ 197 and 217, is unavailing because Fry does not provide support or specificity for his assertion. Although Dr. Fry cited a reference in the cited paragraph, he did not offer an opinion that it would have been the reference used by a POSA. He also did not provide a cut-off for how much guideline for the content of "unburned carbon" would be "too much unburned carbon."

447. *Plaintiffs' expert witness, Andrew Fry, identifies one "example" standard for the suitability of ash in cementitious products, but identifies it only as an example and does not state that it would be the standard that a POSA would apply.*

D.I. # 73, Second Fry Report ¶ 168.

Pl. Response: Disputed. The proposed fact mischaracterizes the opinion offered by Dr. Fry. Dr. Fry explained in his expert report that a POSA would know what properties can affect suitability of fly ash for use in cementitious products and stated that a POSA would be familiar with the ASTM standard. Dkt. 73, Fry Second Report, ¶ 168. The reference to the standard supports Dr. Fry's opinion that a POSA would be familiar with what properties were relevant.

Def. Reply: Undisputed. Plaintiffs' response fails to raise a genuine issue of material fact regarding this PFF. Plaintiffs' attempt to dispute this fact by relying on the Fry Second Report, ¶ 168, is unavailing because Fry does not provide support or specificity for his assertion. Further, Plaintiffs have cited no evidence to support their assertion that "[t]he reference to the standard supports Dr. Fry's opinion that a POSA would be familiar with what properties were relevant."

448. *A POSA would have been motivated to combine the wet flue gas desulphurization systems disclosed by Kilgroe to improve the desulfurization of the flue gas in the Julien experiment, and would have had a reasonable expectation of success in increasing desulfurization.*

D.I. # 75, First Wilcox Report ¶ 210.

Pl. Response: Disputed. The evidence cited does not support this proposed finding of fact. The cited opinion from Dr. Wilcox does not support the proposition that a POSA would have been motivated to combine a wet flue gas desulfurization system disclosed in Kilgroe with the experimental system disclosed in Julien. Rather Dr. Wilcox opined that a POSA would have been motivated to use the calcium bromide disclosed in Julien with a system already using a wet flue gas desulphurization system. Dkt. 75, First Wilcox Report 210. These are two different conclusions. The stated proposed finding of fact is not supported by the cited opinion from Dr. Wilcox. Moreover, the cited opinion does not indicate that a POSA would have had a reasonable expectation of success. . Dkt. 75, First Wilcox Report 210. Furthermore, Dr. Fry's testimony

directly refutes the cited opinion on which Defendants rely in support of this proposed finding of fact. Dkt. 73, Fry Second Report, ¶ 287.

Def. Reply: Undisputed. Def. PFF ¶ 448 is supported by the cited evidence, as is evident by comparing Def. PFF ¶ 448 with the text of the Wilcox report. Paragraph 210 of the First Wilcox Report states that the element would be obvious in light of “Julien in combination with Kilgroe, and/or the background knowledge of a POSA” and explains that FGD systems were known. It additionally states:

A POSA would have been motivated to apply the teachings of Julien relating to the addition of CaBr₂ to improve the desulfurization and oxidized mercury adsorption properties of particles for existing coal-fired utility plants, including those using a wet FGD system.

D.I. # 75, First Wilcox Report ¶ 210. Plaintiffs’ attempt to dispute this fact by relying on the Fry Second Report, ¶ 287, is unavailing because it does not relate to the asserted fact—it relates to electrostatic precipitators, not FGDs.

XIII. 26 U.S.C. § 45 – REFINED COAL TAX CREDITS

449. *To reduce emissions from coal-burning power plants, Congress created tax incentives for one method of reducing emissions: the use of “refined coal.”*

Mark Decl. Ex. 37, 2004 Statute §§ 701(a) and (b).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

450. *In 2004, Congress enacted the American Jobs Creation Act of 2004, partially codified at 26 U.S.C. § 45.*

Mark Decl. Ex. 37, 2004 Statute §§ 701(a) and (b).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

451. *The 2004 Statute created a “refined coal” tax credit subject to certain requirements.*

Mark Decl. Ex. 37, 2004 Statute §§ 701(a) and (b).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

452. *The 2004 Statute defined “refined coal” as coal that, when burned, results in a “qualified emission reduction.”*

Mark Decl. Ex. 37, 2004 Statute § 710(a).

Pl. Response: Disputed. Defendants proposed finding of fact, which allegedly provides the statutory definition of “refined coal,” is incomplete. *See, e.g.,* Dkt. 90-37, 2004 Statute § 710(a)(7) (providing definition for “Refined Coal”).

Def. Reply: Undisputed. Def. PFF ¶ 452 is not incomplete, as is evidence by comparing Def. PFF ¶ 452 to the language of the cited statute. Plaintiffs fail to identify anything that is material incorrect.

453. *The 2004 Statute defined “qualified emissions reduction” as a reduction of at least 20 percent of the emissions of (a) nitrogen oxide and (b) either sulfur dioxide or mercury.*

Mark Decl. Ex. 37, 2004 Statute § 710(a).

Pl. Response: Disputed. Defendants proposed finding of fact, which allegedly provides the statutory definition of “qualified emissions reduction,” is incomplete. Dkt. 90-37, 2004 Statute § 710(a)(7) (providing definition for “Qualified Emission Reduction”).

Def. Reply: Undisputed. Def. PFF ¶ 453 is not incomplete, as is evidence by comparing Def. PFF ¶ 453 to the language of the cited statute. Plaintiffs fail to identify anything that is material incorrect.

454. *To qualify for tax credits, the 2004 Statute required refined coal to be sold by a producer to an “unrelated person” with the expectation that the refined coal would be used to produce steam.*

Mark Decl. Ex. 37, 2004 Statute §§ 701(a) and (b).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

455. *For purposes of 26 U.S.C. § 45, if a corporation is a member of affiliated group of corporations filing a consolidated return, “such corporation shall be treated as selling electricity to an unrelated person if such electricity is sold to such a person by another member of such group.”*

26 U.S.C. § 45(e)(4); 26 U.S.C. § 52(b).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

456. *For purposes of 26 U.S.C. § 45, businesses are considered “unrelated persons” if they are not under common control.*

26 U.S.C. § 45(e)(4); 26 U.S.C. § 52(b).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

457. *To qualify for tax credits, the 2004 Statute required refined coal to be produced in a manner that resulted in an increase of the market value of the coal of at least 50%.*

Mark Decl. Ex. 37, 2004 Statute § 710(a).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

458. *The 2004 Statute made the tax credit available to operators of a “refined coal production facility” that were placed in service after the date of the statute and before January 1, 2009.*

Mark Decl. Ex. 37, 2004 Statute § 710(b).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

459. *The 2004 Statute made the tax credit available to operators of a “refined coal production facility” during the 10-year period beginning on the date the facility was originally placed in service.*

Mark Decl. Ex. 37, 2004 Statute § 710(b).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

460. *The 2004 Statute provided a tax credit of \$4.375 per ton of qualified refined coal produced by the taxpayer at a refined coal production facility and sold by the taxpayer to an unrelated person.*

Mark Decl. Ex. 37, 2004 Statute § 710(b).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

461. *In 2008, Congress extended the Section 45 tax credit for refined coal and modified the criteria for refined coal.*

Mark Decl. Ex. 38, 2008 Statute §§ 101(a) and (b).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

462. *The 2008 Statute extended the placed in-service deadline date for refined coal facilities from January 1, 2009 to January 1, 2010.*

Mark Decl. Ex. 38, 2008 Statute § 101(a).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

463. *The 2008 Statute eliminated the 2004 Statute’s “increased value” test for refined coal.*

Mark Decl. Ex. 38, 2008 Statute § 101(b).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

464. *The 2008 Statute changed the definition of “qualified emission reduction” to mean a reduction of (a) 20 percent of the emissions of nitrogen oxides and (b) 40 percent of the emissions of either sulfur oxides or mercury.*

Mark Decl. Ex. 38, 2008 Statute § 101(b).

Pl. Response: Disputed. Defendants proposed finding of fact, which allegedly provides the statutory definition of “qualified emission reduction,” is incomplete. Dkt. 90–38, 2008 Statute § 101(b).

Def. Reply: Undisputed. Def. PFF ¶ 464 is not incomplete, as is evidence by comparing Def. PFF ¶ 464 to the language of the cited statute. Plaintiffs fail to identify anything that is material incorrect.

465. *In 2010, Congress extended the Section 45 tax credit for refined coal.*

Mark Decl. Ex. 39, 2010 Statute.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

466. *The 2010 Statute extended the placed-in-service deadline date for refined coal facilities from January 1, 2010 to January 1, 2012, and made that extension retroactively applicable to facilities placed in service after December 31, 2009.*

Mark Decl. Ex. 39, 2010 Statute § 702.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

XIV. THE CHEM-MOD SOLUTION

A. MerSorb and S-Sorb

467. *The Chem-Mod Solution uses chemical sorbent additives to reduce the formation of nitrogen oxides (NO_x) and for the capture of mercury (Hg) in coal-burning power plants.*

D.I. # 20-19, Chem-Mod Information Sheet, at 2.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

468. *The Chem-Mod Solution has two components, MerSorb and S-Sorb.*

D.I. # 64, Panczak Dep. 157:1–12; D.I. # 20-19, Chem-Mod Information Sheet, at 2.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

469. *MerSorb consists of at least 51.5% calcium bromide and no more than 48.5% water.*

D.I. # 20-19, Chem-Mod Information Sheet, at 2; D.I. # 35, SAC ¶ 108; D.I. # 49, Answer to SAC ¶ 108; D.I. # 35-22, MerSorb Safety Data Sheet, at 2; Case 280 D.I. # 73, Whittaker Dep. 176:18–177: 25; D.I. # 65, Raleigh Dep. 35:24–36:5.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

470. *S-Sorb is a dry powdered sorbent made from by-products of the cement industry, including cement kiln dust.*

D.I. # 20–19, Chem-Mod Information Sheet, at 2; D.I. # 35, SAC ¶ 96; D.I. # 49, Answer to SAC ¶ 96; D.I. # 35–22, S-Sorb Safety Data Sheet, at 1–2; D.I. # 64, Panczak Dep. 157:22–158:1; Whittaker Dep. 179:3–180:11; D.I. # 65, Raleigh Dep. 36:6–36:18.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

B. History of Chem-Mod

471. *Douglas Comrie is the principal inventor of the Chem-Mod Solution.*

Mark Decl. Ex. 17, The Chem-Mod Solution Multi-Emissions Control Technology, at CHEM-MOD_00003551; D.I. # 58, Comrie Dep. 191:18–192:7.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

472. *Starting in the late 1990s, Comrie began developing methods of treating raw coal to reduce the emission of pollutants from coal-fired power plants.*

D.I. #58, Comrie Dep. 41:2–67:8.

Pl. Response: Disputed. Mr. Comrie could not remember when he began work on treating raw coal. The best he could recall is that it would have been “about late 1990s, early 2000s.” Dkt. 58, 41:1-4.

Def. Reply: Undisputed that beginning in the late 1990’s or early 2000’s, Comrie began developing methods of treating raw coal to reduce the emission of pollutants from coal-fired power plants.

473. *In 2004, Comrie formed Chem-Mod in order to commercialize his patents in the U.S. and Canada.*

D.I. # 58, Comrie Dep. 55:25–56:21; 58:18–24.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

474. *From 2009 through 2018, Comrie was granted at least 18 U.S. patents related to the reduction of coal-fired power plant emissions.*

Mark Decl. Exs. 18–35, U.S. Patent No. 7,507,083; U.S. Patent No. 7,674,442; U.S. Patent No. 7,758,827; U.S. Patent No. 7,776,301; U.S. Patent No. 7,955,577; U.S. Patent No. 7,988,939; U.S. Patent No. 8,114,368; U.S. Patent No. 8,150,776; U.S. Patent No. 8,226,913; U.S. Patent No. 8,313,323; U.S. Patent No. 8,501,128; U.S. Patent No. 8,545,778; U.S. Patent No. 8,574,324; U.S. Patent No. 8,658,115; U.S. Patent No. 8,703,081; U.S. Patent No. 9,169,453; U.S. Patent No. 9,702,554; U.S. Patent No. 9,945,557.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

- 475.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

476.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

477.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

478.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

479.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

C. Use of the Chem-Mod Solution for Section 45 Tax Credits

480. *Sally Batanian of Arthur J. Gallagher & Co. became aware of Section 45 when researching ways to commercialize Comrie’s technology.*

D.I. # 58, Comrie Dep. 67:10–16; D.I. # 66, Batanian Dep. 32:25– 34:9.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

481. *The Chem-Mod Solution can be used to make “Refined Coal” that when sold by a taxpayer to an “unrelated person” qualifies for tax credits under Section 45.*

D.I. # 64, Panczak Dep. 45:15–21, 47:18–25.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

482. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

483. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

D. Licensing of the Chem-Mod Solution to Arbor and Portage

484. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

485. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

486. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

487. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

488. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

489.

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

490.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

XV. NALCO–ALSTOM LITIGATION

491. *On August 24, 2009, Nalco’s predecessor in interest NMI sued Alstom Power, Inc., alleging infringement of the ’692 Patent.*

Mark Decl. Ex. 53, Complaint at 3, Nalco Mobotec, Inc. v. Alstom Power, Inc., No. 1:09-cv-05195, 2009 WL 2860309 (N.D. Ill. 2009), D.I. # 1.

Pl. Response: Undisputed that NMI is at least a predecessor in interest to Nalco with respect to the exclusive license to the ’692 Patent, and that NMI sued Alstom Power Inc., alleging infringement of the ’692 Patent on August 24, 2009. Dkt. 103, PFF ¶¶ 237, 872-73.

Def. Reply: Undisputed.

492. *Alstom manufactured a calcium bromide system for treating coal, called KNX.*

D.I. # 63, Oehr Dep. 217:3–217:7; Mark Decl. Ex. 54, August 10, 2009 Letter, at NALC00357092; D.I. # 83-1, Lawton Report ¶¶ 57, 282.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

493. *Alstom was the exclusive licensee under U.S. Patent No. 6,878,358, issued to Dr. Bernhard Vosteen.*

Mark Decl. Ex. 53, Complaint ¶ 11, Nalco Mobotec, Inc. v. Alstom Power, Inc., 2009 WL 2860309, D.I. # 1; D.I. # 60, Johnson Dep. 171:2–15.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

494. [REDACTED]
[REDACTED]
[REDACTED]

495. [REDACTED]
[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

496. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

497.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

498.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

499.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

500.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

501.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

502. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

503. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

504. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

XVI. NALCO'S MERCONTROL 7895 PRODUCT

A. MerControl 7895

505. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

506.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

507.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

508. *Catharine M. Lawton is an expert in intellectual property and commercial litigation damage assessment and valuation, with specific expertise in intellectual property disputes in manufacturing industries.*

D.I. # 83–1, Lawton Report ¶¶ 1, 5, 7, 10–12.

Pl. Response: Disputed. Ms. Lawton’s expert report asserts that she is an expert in intellectual property and commercial litigation damage assessment and valuation, with specific expertise in intellectual property disputes in manufacturing industries. As of the date of the submission of these objections, Plaintiffs have not had an opportunity to depose Ms. Lawton, and therefore dispute this proposed finding of fact until they have had the opportunity to depose Ms. Lawton and examine her purported credentials.

Def. Reply: Undisputed. Plaintiffs’ statement is argumentative and states a legal conclusion, and the response does not dispute the asserted fact. Plaintiffs’ objection regarding Lawton’s deposition date is immaterial.

509.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

510.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

511.

[REDACTED]

[REDACTED]

[REDACTED]

512.

513. *In 2008, the industry recognized three distinct methods of applying MerControl 7895: application to coal prior to combustion, addition at the pulverizers, and direct injection into the furnace.*

D.I. # 83-1, Lawton Report ¶ 161; Mark Decl. Ex. 153, “Testimony of Dr. Steven A. Benson, Energy & Environment Research Center, University of North Dakota; Committee on Environment and Public Works, United States Senate, Hearing on Mercury Legislation,” U.S. SENATE (May 13, 2008) at 2, https://www.epw.senate.gov/public/_cache/files/9/8/9817b9da-480c-42dd-9dd5-cde78ef1511f/01AFD79733D77F24A71FEF9DAFCCB056.bensontestimony.pdf (last visited Apr. 11, 2019).

Pl. Response: Disputed. Plaintiffs dispute this finding of fact as Defendants have mischaracterized the cited documents. It is Plaintiffs’ position that there are at least three ways to inject an additive into flue gas, including application to coal prior to combustion, addition at the pulverizers, and direct injection into the furnace, and that all of these methods would constitute “injecting . . . into said flue gas” as required by the claims of the ’692 Patent. Dkt. 103, PFF ¶ 440.

Dr. Fry testified that there were at least three general methods for injecting additives into coal combustion flue gas: adding the additive to coal before the coal is introduced into the furnace; adding the additive into the flue gas of the combustion zone; and adding the additive into the flue gas in the ductwork of the boiler downstream of the combustion zone. Dr. Fry testified that all three methods are considered “injecting . . . into flue gas.” Dr. Fry explained that a POSA would be knowledgeable concerning all three methods, and would understand that the various methods were interchangeable and could be considered “injecting . . . into flue gas” as required by the claims of the ’692 Patent. Dkt. 103, ¶¶ 419-420; 424–426, 431; PFF ¶ 907.

The '692 Patent explains that the inventive process “can be adjusted in numerous advantageous ways, e.g., by varying (i) droplet size during injection into flue gas, (ii) concentration of thermolabile species, and (iii) dosing level, etc.” Dr. Fry has explained that “it primarily is the case that factors such as concentration and dosing levels are varied when a different injection site is being considered [for example, injecting into the combustion zone flue gas with the coal directly versus directly injecting the additive itself in the upper furnace.].” Dkt. 103, ¶¶ 416-417.

Indeed, the intrinsic evidence proves that a POSA at the time would have understood the phrase “injecting into flue gas” to encompass all three methods of introducing an additive into coal combustion flue gas, as shown, for example, by Madden. Dkt. 103, PFF ¶ 247, U.S. Patent No. 6,372,187 (“Madden”). Dkt. 74, Fry Reply Report, ¶¶ 53, 63.

The inventor of the Chem-Mod Process, Mr. Comrie, agreed that injecting in with the coal, or injecting alone into the combustor, or injecting further downstream, all were equivalent ways to introduce additives to flue gas, and that one only might need to change the dosing level depending upon which approach used. Dkt. 103, ¶ 418.

Def. Reply: Undisputed. Def. PFF ¶ 513 does not mischaracterize the referenced documents, as is evident by comparing Def. PFF ¶ 513 with the Lawton report and Benton’s testimony. Further, Plaintiffs’ argument that there are “at least” three methods for injecting an additive into flue gas does not dispute the stated fact that in 2008, the industry recognized three distinct methods of applying MerControl 7895.

514. *From at least July 31, 2009 through at least May 5, 2011, the “Mercury Sorbents” page of NMI’s website stated that MerControl 7895 can be “added to the coal pre-furnace, in-furnace, and/or into the flue gas.”*

D.I. # 83-1, Lawton Report ¶¶ 80, 151; Mark Decl. Ex. 154, Mercury Sorbents, NALCO MOBOTEC INC. (July 31, 2009), <https://web.archive.org/web/20090731123645/http://www.nalcomobotec.com:80/technology/mercury-sorbents.html> (last visited Apr. 11, 2019) ; Mark Decl. Ex. 154, Mercury Sorbents, NALCO MOBOTEC (May 5, 2011), <https://web.archive.org/web/20110505071530/http://www.nalcomobotec.com/technology/mercury-sorbents.html> (last visited Apr. 11, 2019).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

515. [REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

516.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

517.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

518.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

519.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

520.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

B. Product Comparisons

521.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

522. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

523. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

524. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

525. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

526.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

527.

[REDACTED]

[REDACTED]

[REDACTED]

528.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

529.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

530.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

C. MerControl 7895 Pricing Structure

531. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

532. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

533.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

534.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

535.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

536.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

D. MerControl 7895 Licenses

537.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

538.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

539. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

540. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

541. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

542. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

543. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

544. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

545. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

546. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

547.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

548.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

549.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

550.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

E. [REDACTED]

551. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

552. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

553.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

554.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

555. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

556. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

557. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

558. [REDACTED]

[REDACTED]

[REDACTED]

559. [REDACTED]

[REDACTED]

[REDACTED]

560. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

XVII. NALCO–CHEM-MOD RELATIONSHIP

A. Chem-Mod and Nalco Representatives

561. *In 2011, Sally Batanian was President of Chem-Mod.*

D.I. # 66, Batanian Dep. 8:25–9:10.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

562. *Prior to 2014, Sally Batanian’s name was Sally Wasikowski.*

D.I. # 66, Batanian Dep. 6:14–7:24.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

563. *At the time she became President of Chem-Mod, Batanian was a tax accountant who understood the requirements of Section 45 and was able to manage the substantial business efforts needed to be eligible for those requirements.*

D.I. # 66, Batanian Dep. 12:10–13:17. 90:11–22.

Pl. Response: Disputed. Defendants proposed finding of fact is vague with respect to “substantial business efforts.” Defendants proposed finding of fact contains attorney argument, which is improper for a proposed fact. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). Plaintiffs do not dispute that at the time Ms. Batanian became President of Chem-Mod, she was a tax accountant who had

some understanding of the requirements of Section 45. Dkt. 66, Batanian Dep. 12:10–13:17. 90:11–22

Def. Reply: Undisputed. Plaintiffs do not dispute the stated fact and do not cite evidence to dispute the stated fact. Plaintiffs’ objection to “substantial business efforts” is immaterial.

564. *Between 2009 and 2013, David Johnson was Global Marketing Director of Air Protection Technologies (“APT”) at Nalco Mobotec Inc., Nalco’s predecessor in interest.*

D.I. # 60, Johnson Dep. 105:21–105:23; David Johnson, LINKEDIN, available at <https://www.linkedin.com/in/david-johnson-7767699/> (last visited Apr. 10, 2019).

Pl. Response: Undisputed that Nalco Mobotec Inc. is at least a predecessor in interest to Nalco with respect to the exclusive license to the ’692 Patent, and that between 2009 and 2013, David Johnson was Global Marketing Director of Air Protection Technologies (“APT”) at Nalco Mobotec Inc.

Def. Reply: Undisputed. Plaintiffs’ response asserts additional facts, but raises no material dispute of the stated fact.

565. *Between 2009 and 2013, Dwayne Kearns was General Manager of APT at Nalco.*

Dwayne Kearns, LINKEDIN, available at <https://www.linkedin.com/in/dwayne-kearns-a463a825/> (last visited Apr. 10, 2019); Mark Decl. Ex. 77, Feb. 18, 2011 Email, at NALC00287111.

Pl. Response: Undisputed that between June 2009 through September 2013. Dwayne Kearns was General Manager of APT at Nalco Water, an Ecolab Company.

Def. Reply: Undisputed. Plaintiffs’ response asserts additional facts, but raises no material dispute of the stated fact.

566. *From 2010 to 2014, Kearns was Johnson’s supervisor.*

D.I. # 60, Johnson Dep. 15:17–16:1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

567. *Between 2003 and 2012, Dr. Brian Higgins was Vice President of Technology at Nalco.*

D.I. # 60, Johnson Dep. 27:18–27:19.

Pl. Response: Disputed. The testimony cited in support of Defendants’ proposed finding of facts explains that “Bryan Higgins for Nalco Mobotec was the chief technology officer.” Dkt. 60, Johnson Dep. Tr. at 27:18–27:19.

Def. Reply: Undisputed that Higgins was the chief technology officer between 2003 and 2012.

568. *Between February 2010 and the present, Bruce Keiser worked as a Research Fellow for Nalco.*

D.I. # 35-17, Declaration of Bruce Keiser, ¶¶ 1–3.

Pl. Response: Disputed. The referenced declaration is dated May 2016. Bruce Keiser is no longer an employee of Nalco Water.

Def. Reply: Undisputed. The response asserts an additional fact, but it raises no material dispute that Keiser was employed by Nalco Water through the May 17, 2016 date of the declaration (D.I. # 35-17), which states at Paragraph 1 that Keiser was an employee of Nalco Water.

569. *Since 2011, John Meier has worked as Director of Marketing for the Metals Management Group at Nalco.*

D.I. # 62, Meier Dep. 22:11–25:7; Meier, LINKEDIN, available at <https://www.linkedin.com/in/jymeier/> (last visited Apr. 10, 2019); D.I. #35-18, Declaration of Meier ¶ 1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

570. *Between 2010 and 2011, Meier worked as a Global Product Line Manager of Mercury Control Solutions at Nalco.*

D.I. # 62, Meier Dep. 22:11–25:7; Meier, LINKEDIN, available at <https://www.linkedin.com/in/jymeier/> (last visited Apr. 10, 2019).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

571. *Since October 2011, Jitendra Shah has worked in research for Nalco.*

D.I. # 62, Meier Dep. 54:7–9; Mark Decl. Ex 78, Dec. 10, 2010 Email at NALC00075239; Mark Decl. Ex. 79, June 29, 2012 Email at CHEM-Mod_00095374.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

572. *In 2011, Erik Fyrwald was Nalco’s Chief Executive Officer (CEO).*

D.I. # 60, Johnson Dep. 67:1–2.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

573. *In 2011, David Flitman was Nalco's Chief Operating Officer (COO).*

D.I. # 60, Johnson Dep. 67:7–8.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

574. *In 2011, Stephen Landsman was Nalco's general counsel.*

D.I. # 60, Johnson Dep. 57:10–22.

Pl. Response: Disputed. Plaintiffs' dispute Defendants' proposed finding of fact as Defendants' have mischaracterized Mr. Johnson's testimony on this point. At no time during Mr. Johnson's deposition, did Mr. Johnson identify Mr. Landsman as being "Nalco's general counsel." Mr. Johnson's testimony is as follows:

Q. To your knowledge, is Stephen Landsman a lawyer?

A. Yes.

Dkt. 60, Johnson Dep. 57:10–22.

Def. Reply: Undisputed. Plaintiffs do not dispute the stated fact and do not cite evidence to dispute the stated fact. Plaintiffs' objection to Landsman's specific job title is immaterial.

B.

575.

576.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

577.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

578.

[REDACTED]

[REDACTED]

[REDACTED]

579.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

580.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

581.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

582.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

583.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

584.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

585. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

586. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

587. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

588.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

589.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

590.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

591.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

592.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

593.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

594.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

595.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

596.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

597.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

598.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

599.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

C. Chem-Mod's Disclosures of Confidential Information

600.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

601. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

602. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

603. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

604. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

605. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

606. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

607. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

608. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

609. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

610.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

611.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

612.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

613.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

614. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

615. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

616. *On April 24, 2015, Nalco named the owner of the Refined Coal facility at Santee Cooper as a defendant in the Chem-Mod Case.*

Mark Decl. Ex. 89, Nalco Company v. Chem-Mod LLC, D.I. # 75, Pl. Nalco Company's Third Amended Compl. for Patent Infringement (Apr. 24, 2015).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

D. Nalco's Understanding of Chem-Mod's Technology

617. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

618. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

619. *In his December 2010 internal email, Higgins noted that he believed CaNO₃ would be more effective if it were “inject[ed] into the furnace” rather than applied to coal.*

Mark Decl. Ex. 90, Dec. 20, 2010 Email, at NALC00293733–734.

Pl. Response: Disputed. Defendants have mischaracterized the email they rely on in order to support this finding of fact. In particular, the email reads in relevant part:

“Chem-mod (from their patents) uses CaN03. Looks like it might work. It also looks like something we should consider injecting into the furnace as it would work better in the furnace than it would work on the coal. I

[REDACTED]

[REDACTED]

[REDACTED]

620. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

621. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

622. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

623.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

624.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

625.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

626. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

627. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

628. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

629.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

630.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

631.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

E. Nalco's Understanding of the Section 45 Business Model

632. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

633. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

634. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

635.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

636.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

F.

[REDACTED]

637.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

638.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

639.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

640.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

641.

[REDACTED]

[REDACTED]

[REDACTED]

642.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

643.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

644.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

645.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

646.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

647.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

648.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

649.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

650. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

651. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

652. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

653. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

654. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

655. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

656. [REDACTED]
[REDACTED]
[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

657. [REDACTED]
[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

658. [REDACTED]
[REDACTED]
[REDACTED]

659.

660.

661.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

662.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

663.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

664.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

665.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

666.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

667.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

668.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

669.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

670.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

671.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

672. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

673. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

674. [REDACTED]
[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

675. [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

676.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

677.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

678.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

679.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

680.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

681.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

G.

[REDACTED]

682.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

683. [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
684. [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
685. [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

686.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

687.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

688.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

689.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

690.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

691.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

692. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

693. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

694.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

695.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

696.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

697.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

698.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

699. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

H. [REDACTED]

700. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

701. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

702.

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

703.

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

704.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

705.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

706.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

707.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

708.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

I. Chem-Mod's Reliance

709. *Chem-Mod knew of the '692 Patent by 2011.*

D.I. # 66, Batanian Dep. 220:12–223:6.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

710. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

711.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

712.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

713.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

714.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

715.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

716.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

717. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

J. [REDACTED]

718. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

719. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

720. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

721.

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

722.

[REDACTED]

723.

[REDACTED]

724.

[REDACTED]

[REDACTED]

[REDACTED]

725.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

726.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

727.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

728. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

729. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

730. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

731. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

732. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

733.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

734.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

XVIII. CHEM-MOD CASE

A. Nalco's Decision to Sue

735.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

736.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

737. *On April 8, 2014, Nalco sued Chem-Mod in the United States District Court for the Northern District of Illinois (the “Chem-Mod Case”).*

Mark Decl. Ex. 89, Nalco Company v. Chem-Mod LLC, Case No. 1:14-cv-02510 (N.D. Ill. Apr. 24, 2015), D.I. # 75, Pl. Nalco Company’s Third Amended Compl. for Patent Infringement.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

738.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

739.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

B. Nalco's Original Complaint

740. *Nalco's first complaint in the Chem-Mod Case alleged that Chem-Mod's "use and licensing of its 'Chem-Mod™ Solution' in the United States" directly infringes the '692 Patent.*

Mark Decl. Ex. 114, Pl. Nalco Company's Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 1, (N.D. Ill. Apr. 8, 2014) ¶ 12.

Pl. Response: Disputed. Plaintiffs' dispute Defendants' proposed finding of fact as is mischaracterizes the allegations raised in Nalco's first complaint in the Chem-Mod case. For example, Nalco alleged, among other things, that "Chem-Mod has infringed and is now infringing the '692 Patent through, among other activities, the use and licensing of its Chem-Mod™ Solution in the United States. On information and belief, the "Chem-Mod™ Solution" comprises dual injection of two additives on the coal feed belts of coal burning power generation stations before the coal is fed into a coal combustion process. The two additives are referred to as MerSorb and S-Sorb and contain significant amounts of calcium bromide and lime, respectively. Because the "Chem-Mod™ Solution" is a method of treating coal combustion flue gas containing mercury, which requires injecting a bromide compound that is a thermolabile molecular bromine precursor into a flue gas to effect oxidation of elemental mercury to a mercuric bromide and which provides an alkaline solid particle in the flue gas ahead of particulate collection, use of the "Chem-Mod™ Solution practices each and every step of at least Claim 1 of the '692 Patent and Chem-Mod infringes the '692 Patent." Dkt. 90-116, Pl. Nalco Company's Compl. for Patent Infringement, *Nalco Company v. Chem-Mod LLC*, 1:14-CV-02510, D.I. # 1, (N.D. Ill. Apr. 8, 2014) ¶ 12.

Def. Reply: Undisputed. Def. PFF ¶ 740 does not mischaracterize the allegations raised in Nalco's first complaint in the Chem-Mod case, as is evidenced by comparing Def. PFF ¶ 740 with Nalco's Complaint for Patent Infringement in the Chem-Mod Case. Plaintiffs assert additional facts, but they do not dispute the stated fact.

741. *Nalco's first complaint in the Chem-Mod Case alleged that the "'Chem-Mod Solution' comprises dual injection of two additives on the coal feed belts of coal burning power generation stations before the coal is fed into a coal combustion process."*

Mark Decl. Ex. 114, Pl. Nalco Company's Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 1, (N.D. Ill. Apr. 8, 2014) ¶ 12.

Pl. Response: Disputed. Plaintiffs' dispute Defendants' proposed finding of fact as is mischaracterizes the allegations raised in Nalco's first complaint in the Chem-Mod case. For example, Nalco alleged, among other things, that "Chem-Mod has infringed and is now infringing the '692 Patent through, among other activities, the use and licensing of its Chem-Mod™ Solution in the United States. On information and belief, the "Chem-Mod™ Solution" comprises dual injection of two additives on the coal feed belts of coal burning power generation stations before the coal is fed into a coal combustion process. The two additives are referred to as MerSorb and S-Sorb and contain significant amounts of calcium bromide and lime, respectively. Because the "Chem-Mod™ Solution" is a method of treating coal combustion flue gas containing mercury, which requires injecting a bromide compound that is a thermolabile molecular bromine precursor into a flue gas to effect oxidation of elemental mercury to a mercuric bromide and which provides an alkaline solid particle in the flue gas ahead of particulate collection, use of the "Chem-Mod™ Solution practices each and every step of at least Claim 1 of the '692 Patent and Chem-Mod infringes the '692 Patent." Dkt. 90-116, Pl. Nalco Company's Compl. for Patent Infringement, *Nalco Company v. Chem-Mod LLC*, 1:14-CV-02510, D.I. # 1, (N.D. Ill. Apr. 8, 2014) ¶ 12.

Def. Reply: Undisputed. Def. PFF ¶ 741 does not mischaracterize the allegations raised in Nalco's first complaint in the Chem-Mod case, as is evidenced by comparing Def. PFF ¶ 741 with Nalco's Complaint for Patent Infringement in the Chem-Mod Case. Plaintiffs assert additional facts, but they do not dispute the stated fact

742. *In the Chem-Mod Case, Nalco never asserted the '692 Patent against entities that burn Refined Coal during the commercial operation of coal-fired power plants.*

Mark Decl. Ex. 114, Pl. Nalco Company's Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 1, (N.D. Ill. Apr. 8, 2014).

Pl. Response: Disputed. The document speaks for itself. To the extent this proposed fact finding is stating that Nalco did not name a power plant as a defendant in the Chem-Mod suit, that is Pl. Response: Undisputed.

Def. Reply: Undisputed. Plaintiffs' response is grammatically unintelligible. Further, Plaintiffs' response does not raise any material dispute to the stated fact.

743. *At the time of suit, Nalco knew that Chem-Mod did not operate any commercial coal-fired power plants.*

Mark Decl. Ex. 114, Pl. Nalco Company's Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 1, (N.D. Ill. Apr. 8, 2014), ¶ 12.

Pl. Response: Disputed. Plaintiffs dispute Defendants' proposed finding of fact as the document referenced in support of Defendants' fact does not support this

proposed fact. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301 *5 (E.D. Wis. March 9, 2007) (explaining that citations to the record that do not support the proposed finding of fact can be disregarded by the court). Dkt. 90-116, Pl. Nalco Company's Compl. for Patent Infringement, *Nalco Company v. Chem-Mod LLC*, 1:14-CV-02510, D.I. # 1, (N.D. Ill. Apr. 8, 2014), ¶ 12. Plaintiffs further dispute this proposed finding of fact as vague with respect to the terms "at the time of suit."

Def. Reply: Undisputed. Def. PFF ¶ 743 is supported by the cited evidence, as is evident by comparing Def. PFF ¶ 743 to Nalco's Complaint for Patent Infringement in the Chem-Mod Case. Further, to the extent Plaintiffs' response of "disputed" suggests that Nalco did not know that Chem-Mod did not operate any coal-fired power plants, the response is incorrect. David Johnson, Nalco's 30(b)(6) representative regarding the Nalco-Chem-Mod relationship, testified to the contrary. D.I. # 60, Johnson Dep. 214:17-22; D.I. # 90, Mark Decl. (Apr. 16, 2019) Ex. 82A, Tax Code 45 Term Sheet.

C. First Amended Complaint Dismissed

744. *On July 25, 2014, Nalco filed its First Amended Complaint in the Chem-Mod Case, naming two affiliates of Chem-Mod as additional defendants.*

Mark Decl. Ex. 115, Pl. Nalco Company's First Am. Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 14, (N.D. Ill. July 25, 2014).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

745. *In both Nalco's first complaint and its First Amended Complaint, Nalco alleged that "injecting" MerSorb onto coal to make refined coal constitutes direct infringement of the '692 Patent.*

Mark Decl. Ex. 114, Pl. Nalco Company's Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 1, (N.D. Ill. Apr. 8, 2014), ¶ 12; Mark Decl. Ex. 115, Pl. Nalco Company's First Am. Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 14, (N.D. Ill. July 25, 2014) ¶ 17

Pl. Response: Disputed. Plaintiffs' dispute Defendants' proposed finding of fact as is mischaracterizes the allegations raised in Nalco's first complaint in the Chem-Mod case. For example, Nalco alleged, among other things, that "Chem-Mod has infringed and is now infringing the '692 Patent through, among other activities, the use and licensing of its Chem-Mod™ Solution in the United States. On information and belief, the "Chem-Mod™ Solution" comprises dual injection of two additives on the coal feed belts of coal burning power generation stations before the coal is fed into a coal combustion process. The two additives are referred to as MerSorb and S-Sorb and contain significant amounts of calcium bromide and lime, respectively. Because the "Chem-Mod™ Solution" is a method of treating coal combustion flue gas containing mercury, which requires injecting a bromide compound that is a thermolabile molecular bromine precursor

into a flue gas to effect oxidation of elemental mercury to a mercuric bromide and which provides an alkaline solid particle in the flue gas ahead of particulate collection, use of the “Chem-Mod™ Solution practices each and every step of at least Claim 1 of the ’692 Patent and Chem-Mod infringes the ’692 Patent.” Dkt. No. 90–116, Pl. Nalco Company’s Compl. for Patent Infringement, *Nalco Company v. Chem-Mod LLC*, 1:14–CV–02510, D.I. # 1, (N.D. Ill. Apr. 8, 2014) ¶ 12; *see also* Dkt. 90–117, Pl. Nalco Company’s First Am. Compl. for Patent Infringement, *Nalco Company v. Chem-Mod LLC*, 1:14–CV–02510, D.I. # 14, (N.D. Ill. July 25, 2014) ¶ 17.

Def. Reply: Undisputed. Def. PFF ¶ 744 is supported by the cited evidence, as is evident by comparing Def. PFF ¶ 744 to Nalco’s Complaint and First Amended Complaint for Patent Infringement in the Chem-Mod Case. Further, Plaintiffs state additional facts, but they raise no dispute of the proposed fact.

746. *On February 4, 2015, the district court dismissed Nalco’s First Amended Complaint without prejudice, pursuant to Federal Rule of Civil Procedure 12(b)(6).*

Mark Decl. Ex. 117, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14–CV–02510, D.I. # 60 (N.D. Ill. Feb. 4, 2015), at 6.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

747. *The district court’s Opinion and Order dismissing Nalco’s First Amended Complaint states:*

The 692 Patent involves injecting chemicals into flue gas after the coal has been burned, whereas the Chem-Mod Solution is a method that adds sorbents to cold coal when it is on the coal feed belts and before it is combusted. Thus, according to the [First Amended Complaint] itself, the [’692 Patent differs from the Chem-Mod Solution in both when it is applied (after the coal is burned vs. before the coal is burned) and how it is applied (injected into the flue gas vs. mixed with cold coal).

Mark Decl. Ex. 117, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14–CV–02510, D.I. # 60 (N.D. Ill. Feb. 4, 2015), at 5–6.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

748. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

D. Second Amended Complaint

749. *On March 3, 2015, Nalco filed a Second Amended Complaint in the Chem-Mod Case.*

Mark Decl. Ex. 118, Pl. Nalco Company's Second Amended Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 64 (N.D. Ill. Mar. 3, 2015).

Pl. Response: Undisputed. Plaintiffs do not dispute this proposed finding of fact, but the public record speaks for itself.

Def. Reply: Undisputed.

750. *In the Second Amended Complaint, Nalco added AJG Coal, Inc. and 34 "Refined Coal LLCs" as defendants.*

Mark Decl. Ex. 118, Pl. Nalco Company's Second Amended Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 64 (N.D. Ill. Mar. 3, 2015) ¶¶ 7–11.

Pl. Response: Undisputed. Plaintiffs do not dispute this proposed finding of fact, but the public record speaks for itself.

Def. Reply: Undisputed.

751. *In its Second Amended Complaint, Nalco alleged that the '692 Patent is infringed when coal treated with MerSorb and S-Sorb ("the Chem-Mod™ Solution Mixture") is "injected into coal combustion flue gas to effect oxidation of elemental mercury into a mercuric bromide."*

Mark Decl. Ex. 118, Pl. Nalco Company's Second Amended Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 64 (N.D. Ill. Mar. 3, 2015) ¶¶ 21, 26.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact to the extent that the referenced language does not represent the entire document, but the public record speaks for itself about the contents of the document.

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact.

E. Third Amended Complaint Dismissed

752. *On April 24, 2015, Nalco filed a Third Amended Complaint in the Chem-Mod Case.*

Mark Decl. Ex. 89, Pl. Nalco Company's Third Amended Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 75 (N.D. Ill. Apr. 24, 2015).

Pl. Response: Undisputed. Plaintiffs do not dispute this proposed finding of fact, but the public record speaks for itself.

Def. Reply: Undisputed.

753. *In its Third Amended Complaint, Nalco replaced the 34 “Refined Coal LLCs” with 21 Chem-Mod licensees that produce Refined Coal.*

Mark Decl. Ex. 89, Pl. Nalco Company’s Third Amended Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14–CV–02510, D.I. # 75 (N.D. Ill. Apr. 24, 2015) ¶¶ 7–11.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact to the extent that it is an oversimplification and does not represent the entire document, but the public record speaks for itself about the contents of the document.

Def. Reply: Undisputed. Plaintiffs’ response does not raise any material dispute to the stated fact.

754. *On October 15, 2015, the district court dismissed the Third Amended Complaint without prejudice, pursuant to Federal Rule of Civil Procedure 12(b)(6).*

Mark Decl. Ex. 119, Order Granting Defs. Mot. to Dismiss, Nalco Company v. Chem-Mod LLC, 1:14–CV–02510, D.I. # 106 (N.D. Ill. Oct. 15, 2015).

Pl. Response: Undisputed. Plaintiffs do not dispute this proposed finding of fact, but the public record speaks for itself.

Def. Reply: Undisputed.

755. *In an opinion and order issued on October 15, 2015, the district court wrote that in all three of the locations where MerSorb was allegedly added, “the MerSorb and coal mixture is added to the process prior to coal combustion. Thus, the additives used in the Chem-Mod Solution are introduced prior to any interaction with coal combustion flue gas and are not ‘injected,’ as required by the elements of the [’]692 Patent.”*

Mark Decl. Ex. 120, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14–CV–02510, D.I. # 107 (N.D. Ill. Oct. 15, 2015), at 6.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact to the extent that the referenced language does not represent the entire document, but the public record speaks for itself about the contents of the document.

Def. Reply: Undisputed. Plaintiffs’ response does not raise any material dispute to the stated fact.

756. *In the court’s October 15, 2015 opinion and order, the district court found that Chem-Mod and its licensees cannot be held liable under a joint infringement theory, because “The fact that the Refined Coal LLCs receive Section 45 tax*

credits is not evidence that they direct and control the alleged infringing actions of each coal-fired power plant, and the [Third Amended Complaint] does not sufficiently support the presence of a joint enterprise.”

Mark Decl. Ex. 120, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14–CV–02510, D.I. # 107 (N.D. Ill. Oct. 15, 2015), at 8.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact to the extent that the referenced language does not represent the entire document, but the public record speaks for itself about the contents of the document.

Def. Reply: Undisputed. Plaintiffs’ response does not raise any material dispute to the stated fact.

F. Fourth Amended Complaint Dismissed with Prejudice

757. *On November 16, 2015, Nalco filed a Fourth Amended Complaint in the Chem-Mod case.*

Mark Decl. Ex. 121, Pl. Nalco Company’s Fourth Amended Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14–CV–02510, D.I. # 108 (N.D. Ill. Nov. 16, 2015).

Pl. Response: Undisputed. Plaintiffs do not dispute this proposed finding of fact, but the public record speaks for itself.

Def. Reply: Undisputed.

758. *In its Fourth Amended Complaint, Nalco alleged that the ’692 Patent is infringed when MerSorb-treated coal is “injected into coal combustion flue gas”; that Refined Coal suppliers “contribute” to infringement by selling refined coal; that Refined Coal suppliers “direct and control” the use of Refined Coal at power plants; and that Refined Coal suppliers and power plant operators engage in a “joint enterprise” in connection with the sale of refined coal for Section 45 tax credits.*

Mark Decl. Ex. 121, Pl. Nalco Company’s Fourth Amended Compl. for Patent Infringement, Nalco Company v. Chem-Mod LLC, 1:14–CV–02510, D.I. # 108 (N.D. Ill. Nov. 16, 2015) ¶¶14(d), 27, 83, 114.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact to the extent that the referenced language does not represent the entire document, but the public record speaks for itself about the contents of the document.

Def. Reply: Undisputed. Plaintiffs’ response does not raise any material dispute to the stated fact.

759. *On April 20, 2016, the district court dismissed the Fourth Amended Complaint with prejudice, pursuant to Federal Rule of Civil Procedure 12(b)(6).*

Mark Decl. Ex. 122, Order Granting Defs. Mot. to Dismiss, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 118 (N.D. Ill. Apr. 20, 2016).

Pl. Response: Undisputed. Plaintiffs do not dispute this proposed finding of fact, but the public record speaks for itself.

Def. Reply: Undisputed.

760. *In its April 20, 2016 order, the district court held that “Nalco fails to establish that the methods of the Chem-Mod Solution directly infringe on the method in the ’692 Patent. Therefore ... dismissal is proper.”*

Mark Decl. Ex. 123, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 119 (N.D. Ill. Apr. 20, 2016), at 6.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact as incomplete and therefore mischaracterizing the Court’s holding. In particular, the Court held that, “where there are no facts of direct infringement at the pleadings stage, dismissal is proper.” Dkt. 90–125, Mem. Opinion and Order, *Nalco Company v. Chem-Mod LLC*, 1:14-CV-02510, D.I. # 119 (N.D. Ill. Apr. 20, 2016), at 6.

Def. Reply: Undisputed. Plaintiffs assert an additional fact, but it raises no dispute of the proposed fact.

761. *In its April 20, 2016 order, the district court also concluded that “[F]inancial compensation for performing the Chem-Mod Solution . . . in the form of lease payments from the Refined Coal LLCs or a reduced price for the purchase of the Chem-Mod Solution Mixture . . . does not adequately demonstrate control over coal plants.”*

Mark Decl. Ex. 123, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 119 (N.D. Ill. Apr. 20, 2016), at 7–8.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact as it mischaracterizes the Court’s decision. In particular, the Court simply stated that “[a]n offer to sell coal at a reduced price does not adequately demonstrate control over coal plants.” Dkt. 90–125, Mem. Opinion and Order, *Nalco Company v. Chem-Mod LLC*, 1:14-CV-02510, D.I. # 119 (N.D. Ill. Apr. 20, 2016), at 7–8.

Def. Reply: Undisputed. Plaintiffs assert an additional fact, but it raises no dispute that the district court’s order contains the quoted text.

762. *In its April 20, 2016 order, the district court also concluded that “Any argument that compliance with Section 45 of the tax code,” which requires that Refined Coal sellers and buyers not be “related,” “is unpersuasive.”*

Mark Decl. Ex. 123, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 119 (N.D. Ill. Apr. 20, 2016), at 7–8.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact as it mischaracterizes the Court’s decision. In particular, the Court simply stated that “[a]s stated in the Memorandum and Opinion dated October 15, 2015, ‘any argument that compliance with Section 45 of the tax code is evidence that Defendants direct and control the infringement of a patent is unpersuasive.’” Dkt. 90–125, Mem. Opinion and Order, *Nalco Company v. Chem-Mod LLC*, 1:14–CV–02510, D.I. # 119 (N.D. Ill. Apr. 20, 2016), at 7–8.

Def. Reply: Undisputed. Def. PFF ¶ 762 is supported by the cited evidence, as is evident by comparing Def. PFF ¶ 762 to the district court’s order in the Chem-Mod Case. Further, Plaintiffs state additional facts, but they raise no dispute of the proposed fact.

763. *In its April 20, 2016 order, the district court also concluded that “The existence of a contract between Refined Coal LLCs and several power plants for purchase of the Chem-Mod Solution Mixture is not sufficient support for the allegation of a joint enterprise.”*

Mark Decl. Ex. 123, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14–CV–02510, D.I. # 119 (N.D. Ill. Apr. 20, 2016), at 7–8.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact to the extent that the referenced language does not represent the entire document, but the public record speaks for itself about the contents of the document.

Def. Reply: Undisputed. Plaintiffs’ response does not raise any material dispute to the stated fact.

764. *In its April 20, 2016 order, the district court also concluded that “Nalco’s claim that Chem-Mod directs and controls the power plants is unsupported by the factual allegations of the [Fourth Amended Complaint].”*

Mark Decl. Ex. 123, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14–CV–02510, D.I. # 119 (N.D. Ill. Apr. 20, 2016), at 8.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact to the extent that the referenced language does not represent the entire document, but the public record speaks for itself about the contents of the document.

Def. Reply: Undisputed. Plaintiffs’ response does not raise any material dispute to the stated fact.

765. *In its April 20, 2016 order, the district court also concluded that “Nalco[’s] claim[] that the equal right of control rises out of the fact that the power plants can stop using the Chem-Mod Solution and Refined Coal LLCs can stop selling it . . . is contradictory to Nalco’s argument that Chem-Mod directs and controls the power plants.”*

Mark Decl. Ex. 123, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14–CV–02510, D.I. # 119 (N.D. Ill. Apr. 20, 2016), at 8.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact to the extent that the referenced language does not represent the entire document, but the public record speaks for itself about the contents of the document.

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact.

766. *In its April 20, 2016 order, the district court found that "Nalco has not sufficiently pled a claim for direct infringement or intent to cause infringement," and "as Nalco has not established a claim for direct infringement, it has failed to establish a claim for contributory infringement as well."*

Mark Decl. Ex. 123, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 119 (N.D. Ill. Apr. 20, 2016), at 9.

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact to the extent that the referenced language does not represent the entire document, but the public record speaks for itself about the contents of the document.

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact.

G. Motion for Reconsideration Denied

767. *On May 18, 2016, Nalco moved for reconsideration of the district court's order dismissing the Fourth Amended Complaint with prejudice.*

Mark Decl. Ex. 124, Pl. Nalco Company's Mot. for Reconsideration of Order on Mot. to Dismiss the Fourth Am. Compl., Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 129 (N.D. Ill. May 18, 2016).

Pl. Response: Undisputed. Plaintiffs do not dispute this proposed finding of fact, but the public record speaks for itself.

Def. Reply: Undisputed.

768. *In its motion for reconsideration, Nalco proffered two declarations from employees, a declaration from Klaus Oehr, and a declaration from a putative expert witness in this case, Andrew Fry.*

Mark Decl. Ex. 124, Pl. Nalco Company's Mot. for Reconsideration of Order on Mot. to Dismiss the Fourth Am. Compl., Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 129 (N.D. Ill. May 18, 2016); Mark Decl. Ex. 125, Nalco Company v. Chem-Mod LLC, D.I. # 129-8, Decl. of K. Oehr; Mark Decl. Ex. 126, Nalco Company v. Chem-Mod LLC, D.I. # 129-9, Decl. of A. Fry; Mark Decl. Ex. 127, Nalco Company v. Chem-Mod LLC, D.I. # 129-18, Decl. of B. Keiser; Mark Decl. Ex. 128, Nalco Company v. Chem-Mod LLC, D.I. # 129-19, Decl. of J. Meier.

Pl. Response: Undisputed. Plaintiffs do not dispute this proposed finding of fact, but the public record speaks for itself.

Def. Reply: Undisputed.

769. *On September 14, 2016, the district court denied Nalco's motion for reconsideration, leaving in place a final judgment that the use of the Chem-Mod Solution does not infringe the '692 Patent.*

Mark Decl. Ex. 129, Mem. Opinion and Order, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 136 (N.D. Ill. Sept. 14, 2016).

Pl. Response: Disputed. Plaintiffs dispute Defendants' proposed finding of fact as it mischaracterizes the referenced final judgment. The Court did not issue a final judgment that the use of the Chem-Mod Solution does not infringe the '692 Patent. Rather, the Court "found that Nalco failed to allege a claim of direct or indirect infringement." Dkt. 90-131, Mem. Opinion and Order, *Nalco Company v. Chem-Mod LLC*, 1:14-CV-02510, D.I. # 136 (N.D. Ill. Sept. 14, 2016), at p. 6.

Def. Reply: Undisputed. Plaintiffs have not cited evidence that disputes the stated fact.

H. Nalco's Appeal to the Federal Circuit

770. *On October 12, 2016, Nalco filed an appeal from the final judgment of dismissal with prejudice.*

Mark Decl. Ex. 130, Notice of Appeal, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 138 (N.D. Ill. Oct. 12, 2016).

Pl. Response: Undisputed. Plaintiffs do not dispute this proposed finding of fact, but the public record speaks for itself.

Def. Reply: Undisputed.

771. *On appeal, citing the documents proffered in its motion for reconsideration, Nalco argued that it should be permitted to proceed to claim construction in the Chem-Mod Case.*

Mark Decl. Ex. 131, Plaintiffs-Appellants' Opening Appellate Brief, Nalco Company v. Chem-Mod LLC, 883 F.3d 1337 (Fed. Cir. 2018).

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact to the extent that the referenced language does not represent the entire document, but the public record speaks for itself about the contents of the document.

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact.

772. *Nalco did not appeal the portion of the district court's decision that, as a matter of law, there can be no direct joint infringement liability for Refined Coal producers arising from the commercial use of Refined Coal in compliance with Section 45.*

Mark Decl. Ex. 131, Mark Decl. Ex. 131, Plaintiffs-Appellants' Opening Appellate Brief, Nalco Company v. Chem-Mod LLC, 883 F.3d 1337, 1351 (Fed. Cir. 2018).

Pl. Response: Disputed. The proposed finding of fact is argumentative, and Plaintiffs dispute it for that reason. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). The limited issue not appealed by Nalco was directed to the question of whether mere compliance with Section 45 alone would be sufficient to establish “control” for joint infringement liability. There is no collateral estoppel with respect to any issue in this case, as Plaintiffs have explained in Section IV (A)(3) of Plaintiffs Opposition to Defendants’ Motion for Summary Judgment, which is incorporated herein by reference. In any event, Defendants have waived any collateral estoppel defense, as also explained in Section IV (A)(3) of Plaintiffs’ Opposition.

Def. Reply: Undisputed. Plaintiffs have raised additional facts, but they raise no dispute of the proposed facts. Def. PFF ¶ 772 makes no mention of collateral estoppel. Further, Plaintiffs’ statements regarding collateral estoppel are argumentative and state a legal conclusion.

773. *On February 27, 2018, the Court of Appeals for the Federal Circuit reversed and remanded the district court’s order dismissing Nalco’s Fourth Amended Complaint, “except with respect to the district court’s dismissal of Nalco’s allegations of divided infringement for commercial applications, which we do not disturb.”*

Mark Decl. Ex. 131, Mark Decl. Ex. 131, Plaintiffs-Appellants' Opening Appellate Brief, Nalco Company v. Chem-Mod LLC, 883 F.3d 1337, 1357 (Fed. Cir. 2018).

Pl. Response: Disputed. Plaintiffs dispute this proposed finding of fact to the extent that the referenced language does not represent the entire document, but the public record speaks for itself about the contents of the document.

Def. Reply: Undisputed. Plaintiffs’ response does not raise any material dispute to the stated fact.

774. *On April 19, 2018, Nalco voluntarily dismissed all claims in the Chem-Mod Case.*

Mark Decl. Ex. 132, Pl. Nalco Company’s Notice of Voluntary Dismissal Without Prejudice, Nalco Company v. Chem-Mod LLC, 1:14-CV-02510, D.I. # 147 (N.D. Ill. Apr. 19, 2018).

Pl. Response: Undisputed. Plaintiffs do not dispute this proposed finding of fact, but the public record speaks for itself.

Def. Reply: Undisputed.

XIX. ARBOR AND PORTAGE REFINED COAL OPERATIONS

A.

775.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

776.

777.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

778.

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

779.

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

780.

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

B.

[REDACTED]

781.

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

782. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

783. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

784. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

785. *Under the Refined Coal Supply Agreement, Arbor agreed to produce Refined Coal using the raw coal purchased pursuant to the Coal Feedstock Purchase Agreement, and WPS agreed to purchase all the Refined Coal Arbor produced.*

Mark Decl. Ex. 4, WPS – Arbor Refined Coal Supply Agreement (July 8, 2016), § 5.1.

[REDACTED]

[REDACTED]

[REDACTED]

786. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

787. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

788. [REDACTED]
[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

789. [REDACTED]
[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

790. [REDACTED]
[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

791. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

792.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

793.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

C. Preparation of Refined Coal at the Arbor Refined Coal Facility

794. *From November 2016 through July 13, 2018, Arbor owned and operated a Refined Coal Facility adjacent to the Weston Power Plant.*

Mark Decl. Ex. 137, Arbor Fuels Notice of Commercial Operations (Nov. 2, 2016), at ARBOR_00001382; D.I. # 59, Hujet Dep. 182:18–184:09; D.I. # 64, Panczak Dep. 261:24–262:20; D.I. # 65, Raleigh Dep. 12:21–13:10.

[REDACTED]

[REDACTED]

795. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

796. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

797. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

798. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

799. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

800. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

801. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

802. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

803.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

804.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

805.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

806.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

807.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

D. [REDACTED]

808. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

809. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

810. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

811.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

812.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

813.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

814.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

815. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

816. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

817. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

818. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

819.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

820.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

E. Preparation of Refined Coal at the Portage Refined Coal Facility

821. *From October 2016 to July 2018, Portage owned and operated a Refined Coal facility adjacent to the Columbia Energy Center.*

Mark Decl. Ex. 8, Portage – WPL Coal Feedstock Purchase Agreement (Sept. 6, 2016) § 6.2, Coal Purchase Obligations; Mark Decl. Ex. 9, Portage – WPL Refined Coal Supply Agreement (Sept. 6, 2016), Article VI, Purchase and Sale of Coal; Article VIII, Refined Coal and Resold Coal Specifications; Article IX, Price, Billing and Payment; Mark Decl. Ex. 10, Portage – WPL Coal Handling and Administration Agreement (Sept. 6, 2016), Article V, Services; Article VI, Compensation and Related Matters, Mark Decl. Ex. 11, Portage – WPL License and Services Agreement (Sept. 6, 2016), § 2.3, Assembly and Installation of the Facility, the Ancillary Equipment, and the Utility and Site Improvements; D.I. # 64, Panczak Dep. 236:15–240:17; D.I. # 61, Kaminski Dep. 81:11–87:25; D.I. # 57, Berkimer Dep. 118:19–125:17, 145:1–167:4, 247:17–248:21; Case 280 Lokenvitz Dep. 69:21–70:10; 86:8–24.

[REDACTED]

[REDACTED]

822.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

823.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

824.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

825. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

826. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

827. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

828. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

829. [REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

830.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

831.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

832.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

833.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

834.

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

835.

[REDACTED]

XX. USE OF REFINED COAL AT WESTON UNIT 3 AND COLUMBIA UNIT 1

A. Combustion of Coal At the Accused Plants

836. *Fry stated that there were no difference between the operations of the Portage and Arbor plants that he relied on for his infringement opinions.*

D.I. # 71, Fry Dep. 33:21–34:15.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact as the referenced testimony does not support this statement. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301 *5 (E.D. Wis. March 9, 2007) (explaining that citations to the record that do not support the proposed finding of fact can be disregarded by the court). Rather, Dr. Fry’s testimony states that his “opinions [about direct infringement] are the same for Arbor as for Portage.” Dkt. 71, Fry Dep. 33:21–34:15.

Def. Reply: Undisputed. The referenced citation supports Defendants’ PFF by explicitly including the following quote from Fry:

Q. Are there any differences between the operations of Portage and Arbor that you rely on in connection with any of your infringement opinions?

A. No.

D.I. # 71, Fry Dep. 34:12–15.

837. *Plaintiffs served a demand for inspection for each of the accused plants and facilities, requesting testing, sampling, and measurement during their two days of tours and inspections of the accused plants and facilities.*

Mark Decl. Ex. 160, Pls.' Demands for Inspection of Premises and/or Things (Oct. 17, 2018).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

838. *Plaintiffs' expert witness, Andrew Fry, performed no measurements of Br2 or HgBr2 at the accused plants.*

D.I. # 71, Fry Dep. 44:5–20 (testifying that he took no measurements at all at Columbia Unit 1 or Weston Unit 3).

Pl. Response: Disputed. Plaintiffs dispute Defendants' proposed finding of fact as mischaracterizing Dr. Fry's testimony. For example, the referenced testimony does not discuss HgBr2. Dkt. 71, Fry Dep. 44:5–20.

Def. Reply: Undisputed. Def. PFF ¶ 838 is supported by the referenced testimony. The cited testimony reflects that Fry did not "make any measurements at all at Columbia Unit 1 or Weston Unit 3," D.I. # 71, Fry Dep. 44:5–7, which necessarily means that Fry did not perform measurements of HgBr2 at the accused plants.

839. *In Columbia Energy Center Unit 1, air emissions treatment systems include the injection of activated carbon ("ACI") through lances into the flue gas ductwork to help capture mercury from the flue gas.*

Case 280 D.I. # 66, Lokenvitz Dep. at 44:12-45:14, 65:20-25, 78:9-17.

Pl. Response: Undisputed, provided it is understood that in the context of this fact finding, the phrase "flue gas ductwork" is meant to refer to the pathway of flue gas after it exits the boiler.

Def. Reply: Undisputed, to the extent Defendants understand the term "flue gas" as "the gases in the region from above the combustion zone through the stack outlet that result from the substantially-complete combustion of coal." D.I. # 82, Amended Joint Table of Terms Requiring Construction, at 2.

840. *Plaintiffs have identified no equipment at either Weston Power Plant Unit 3 or Columbia Energy Center Unit 1 for injecting calcium bromide into the gases in the upper furnace, the convective section of the furnace, the economizer, or the flue gas ductwork.*

D.I. # 72, First Fry Report ¶¶ 164–165 (accusing Defendants of infringement based on use of boiler).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

841. *Weston Power Plant Unit 3 and Columbia Energy Center Unit 1 each has a system for introducing combustion air at different stages.*

D.I. # 76, Second Wilcox Report ¶ 16.

Pl. Response: Disputed. Plaintiffs object to Defendants' proposed finding of fact as it is not clear what is meant by the use of the terms "combustion air at different stages." Further, the referenced paragraphs from Dr. Wilcox's report [REDACTED]

[REDACTED] Dkt. No. 76, 76, Second Wilcox Report, ¶ 16.

Def. Reply: Undisputed. Def. PFF ¶ 841 is not vague and is supported by the cited evidence. Paragraph 16 of the Second Wilcox Report [REDACTED]

[REDACTED] D.I. # 76, Second Wilcox Report ¶ 16. Paragraph 82 of the Second Wilcox Report discusses [REDACTED] D.I. # 76, Second Wilcox Report ¶ 82.

842. *Weston Power Plant Unit 3 and Columbia Energy Center Unit 1 each introduces, with the fuel, less air than is required for complete combustion of coal to occur, and then introduces additional air (i.e., "overfired air," or "OFA") further downstream from the fireball (i.e., higher up in the furnace).*

D.I. # 76, Second Wilcox Report ¶ 16.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

843. *According to Plaintiffs' expert witness, Andrew Fry, at both Weston Unit 3 and Columbia Unit 1 the overfired air is introduced below the nose arch, which is a constriction in the furnace that helps mix the gases.*

D.I. # 71, Fry Dep. 108:19–114:19.

Pl. Response: Disputed. Plaintiffs dispute Defendants' proposed finding of fact as it mischaracterizes Dr. Fry's testimony. For example, the referenced testimony is based on Dr. Fry's hand-drawn sketch, and not on a diagram of either Weston Unit 3 or Columbia Unit 1. Further, Dr. Fry does not testify that the "overfired air is introduced below the nose arch," as alleged in Defendants' proposed finding of fact. Rather, with respect to Dr. Fry's hand-drawn sketch, Dr. Fry testifies that injector levels are below the area where the overfired air enters the plant. Dkt. 71, Fry Dep. 108:19–114:19.

Def. Reply: Undisputed. Def. PFF ¶ 843 does not mischaracterize Fry's testimony. As is evidenced by the cited testimony, Fry denoted on his diagram that overfired air is introduced in the lower furnace below the

nose arch. D.I. # 71, Fry Dep. 108:19–114:19. Further, it is irrelevant whether Fry was discussing a hand-drawn sketch as opposed to a diagram of Weston Unit 3 or Columbia Unit 1, as he acknowledged that his sketch was “[r]oughly representative of a tangential-fired furnace” and “a reasonable description” “of the geometries at the Columbia Power Plant Unit 1 and Weston Power Plant Unit 3.” D.I. # 71, Fry Dep. 108:19–114:19. Fry’s hand-drawn diagram and testimony thus establish that (i) the point where the overfired air enters, B, is below the nose arch, A; and (ii) this geometry and configuration apply at Columbia and Weston. See Mark Decl. (May 28, 2019), Ex. 240 (Fry drawing).

844. *When asked at his deposition about the list of factors that he opined a POSA should test or consider in order to determine whether a bromide compound would be a thermolabile molecular bromine precursor, Plaintiffs’ expert witness, Andrew Fry, claimed that he had considered the various factors, but did not provide any testimony as to how he actually considered each such factor in his infringement opinion.*

D.I. # 71, Fry Dep. 140:17–152:18.

Pl. Response: Disputed. Plaintiffs dispute Defendants’ proposed finding of fact as argumentative. *McMahon v. Carroll College*, No. 04-C-384, 2007 U.S. Dist. LEXIS 17301, *5 (E.D. Wis. March 9, 2007) (“Arguments have no place in proposed findings of fact or responses to such findings.”). Plaintiffs further dispute Defendants’ proposed finding of fact as is mischaracterizes Dr. Fry’s testimony. For example, when asked whether he considered the referenced factors, Dr. Fry testified that he did, and then explained how he relied on the Niksa article for his evaluation. See, e.g., Dkt. 71, 142:18-143:19. Dr. Fry also testified that

[REDACTED]

Def. Reply: Undisputed. Def. PFF ¶ 844 does not mischaracterize Fry’s testimony, as is evident by comparing Def. PFF ¶ 844 with the text of the Fry deposition. Plaintiffs have not introduced evidence that shows that Def. PFF ¶ 844 is unsupported; instead, the response asserts additional facts, but does not contradict the stated fact. None of the evidence cited by Plaintiffs reflects any deposition testimony from Fry regarding [REDACTED]

B. Combustion of Refined Coal at Weston Power Plant Unit 3

845. *Weston Power Plant has two coal-fired units, only one of which (Unit 3) is accused of infringement.*

D.I. # 35, SAC; D.I. # 49, Answer to SAC; D.I. # 68; Pfeiffer Dep. 23:20–24.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

846. *Weston Power Plant Unit 3 is a tangential-fired boiler with over-fired air.*

D.I. # 83-1, Lawton Report ¶ 195; D.I. # 72, First Fry Report ¶ 168; Mark Decl. Ex. 144, August 3, 2015 Email, at WPS_00012795–96; D.I. # 59, Hujet Dep. 245:3–22.

[REDACTED]

847. *At Weston Power Plant Unit 3, coal is pulverized mechanically into a fine powder and exposed to heating and drying processes before it is blown into the combustion zone of the furnace.*

D.I. # 76, Second Wilcox Report ¶ 82.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

848. *The air directed into the lower furnace is insufficient for complete combustion of the coal.*

D.I. # 75, First Wilcox Report ¶ 102; D.I. # 76, Second Wilcox Report ¶ 82.

Pl. Response: Disputed as the term “complete combustion” is not defined in the context of the proposed finding of fact.

Def. Reply: Undisputed. The response does not dispute the stated fact. Plaintiffs’ objection to “complete combustion” is immaterial.

849. *In Weston Power Plant Unit 3, combustion is not substantially completed until after the initial combustion gases are further combusted in overfired air.*

D.I. # 75, First Wilcox Report ¶ 102; D.I. # 76, Second Wilcox Report ¶ 82.

Pl. Response: Disputed as the term “complete combustion” is not defined in the context of the proposed finding of fact.

Def. Reply: Undisputed. The response does not dispute the stated fact. Plaintiffs’ objection to “complete combustion” is immaterial.

850. *From the economizer at Weston Power Plant Unit 3, the gas enters the baghouse, where particulates are collected.*

D.I. # 59, Hujet Dep. 41:19–42:13.

[REDACTED]

[REDACTED]

851. *Downstream of the baghouse, gas enters Weston’s ReACT system, which uses activated carbon for flue gas desulfurization.*

D.I. # 59, Hujet Dep. 41:23–42:13.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

852. *After exiting the ReACT system, the gas enters a slipstream polishing fabric filter.*

D.I. # 59, Hujet Dep. 41:25–42:1.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

853. *The gas then exits the unit through the smokestack.*

D.I. # 59, Hujet Dep. 199:4–200:15.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

C. Combustion of Refined Coal at Columbia Energy Center Unit 1

854. *Columbia Energy Center has two coal-fired units, only one of which (Unit 1) is accused of infringement.*

Case 280 D.I. # 38, SAC ¶ 28; Case 280 D.I. # 54, Answer to SAC ¶ 28.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

855. *Columbia Energy Center Unit 1 is a tangential-fired boiler with over-fired air.*

D.I. # 83-1, Lawton Report (March 13, 2019) ¶ 195; Case 280 D.I. # 66, Lokenvitz Dep. 22:11–17, 111:17–112:11, 149:20–150:6.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

856. *At Columbia Energy Center Unit 1, coal is pulverized mechanically into a fine powder and exposed to heating and drying processes before it is blown into the combustion zone of the furnace.*

D.I. # 76, Second Wilcox Report ¶ 82.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

857. *The air directed into the lower furnace is insufficient for complete combustion of the coal.*

D.I. # 75, First Wilcox Report (January 29, 2019) ¶ 102; D.I. # 76, Second Wilcox Report (March 6, 2019) ¶ 82.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

858. *In Columbia Energy Center Unit 1, combustion is not substantially completed until after the initial combustion gases are further combusted in overfired air.*

D.I. # 75, First Wilcox Report (January 29, 2019) ¶ 102; D.I. # 76, Second Wilcox Report (March 6, 2019) ¶ 82.

Pl. Response: Disputed as the term “complete combustion” is not defined in the context of the proposed finding of fact.

Def. Reply: Undisputed. The response does not dispute the stated fact. Plaintiffs’ objection to “complete combustion” is immaterial.

859. *At Columbia Energy Center Unit 1, the gas created by combustion exits the boiler to be treated by a number of systems.*

Case 280 D.I. # 66, Lokenvitz Dep. 203:23–204:24.

Pl. Response: Disputed. This proposed finding of fact is vague in its use of the phrase “to be treated by a number of systems” and therefore is ambiguous and unclear as phrased and is disputed for that reason.

Def. Reply: Undisputed. The response does not dispute the stated fact. Plaintiffs’ objection to “to be treated by a number of systems” is immaterial.

XXI. NALCO'S FORBEARANCE

A. Nalco's Knowledge of Weston

860.

[illegible]

[REDACTED]

861.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

862. *DTE performed a test burn of Refined Coal at the Weston Power Plant in 2011.*

D.I. # 61, Kaminski Dep. 221:3–23.

Pl. Response: Undisputed.

Def. Reply: Undisputed.

863. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

B. Nalco's Knowledge of Columbia

864. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

865.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

866.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

867.

[REDACTED]

[REDACTED]

[REDACTED]

Pl. Response: Undisputed.

Def. Reply: Undisputed.

868. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

869. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

C. Defendants' Reliance

870. *Prior to the development of the Arbor and Portage Refined Coal facilities, Defendants were aware that calcium bromide was available on the open market without a license to the '692 Patent.*

D.I. # 57, Berkimer Dep. 20:23–24:7; Mark Decl. Ex. 74, Nalco – Alliant First Amendment to Contract Number 40360, Schedule F.1, MerControl Pricing and License Terms.

Pl. Response: Disputed.

[REDACTED]

Def. Reply: Undisputed. Def. PFF ¶ 870 is supported by the cited evidence, as is evident by comparing Def. PFF ¶ 870 with the referenced testimony and the First Amendment. Further, the record shows that the

[REDACTED] D.I. # 108, Def. PFF ¶ 553; D.I. # 107, Def. Op. Br. 84–85; D.I. # 132, Def. Supp. PFF ¶¶ 904–913, 917, 921–922.

871. *Prior to establishing Refined Coal facilities, DTE sought and obtained the licenses it believed it needed to make and sell Refined Coal.*

D.I. # 64, Panczak Dep. 59:6–20; 61:16–25.

Pl. Response: Disputed. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

© 2005 Blackwell Publishing Ltd *Journal of Internal Medicine* 258: 105–112

████████████████████

[REDACTED]

[REDACTED]

Def. Reply: Undisputed. The response asserts additional facts, but it raises no dispute of the proposed fact. Panczak was asked

[REDACTED]

This directly supports Def. PFF ¶ 871.

872. *In 2016, Defendants were aware that technologies other than the Chem-Mod Solution, including potassium iodide-based products, that could be used to create refined coal.*

Case 280 D.I. # 66, Lokenvitz Dep. 219:21–220:12; D.I. # 64, Panczak Dep. 229:25–230:16; Mark Decl. Ex. 183, Dec. 2, 2015 Email at PORTAGE 00095220–21; D.I. # 60, Johnson Dep. 147:11–15; Mark Decl. Ex. 99, D. Johnson Errata Sheet.

Pl. Response: Undisputed, the Defendants were aware of such technologies, but it is disputed to the extent the factfinding is meant to imply that these technologies would have been practically or commercially available for Defendants to use.

Def. Reply: Undisputed. Plaintiffs' response does not raise any material dispute to the stated fact. Def. PFF ¶ 872 does not discuss the practicality or commercial availability of the referenced technologies; further, Plaintiffs have cited no evidence to support that the technologies would not have been practically or commercially available to Defendants.

873. *In establishing the Arbor and Portage Refined Coal facilities, Arbor and Portage's predecessors in interest forwent other potential host sites for Refined Coal operations.*

D.I. # 64, Panczak Dep. 31:2–33:9.

Pl. Response: Disputed. [REDACTED]

Def. Reply: Undisputed. Def. PFF ¶ 873 is supported by the record. Defendants' testimony shows that [REDACTED]

[REDACTED] D.I. # 108, Def. PFF ¶ 818, D.I. # 57, Berkimer Dep. 173:7–183:13; D.I. # 64; Panczak Dep. 145:25–146:20; D.I. # 108, Def. PFF ¶ 792, Mark Decl. Ex. 41, Mar. 23, 2016 Email, at PORTAGE 00062865; D.I. # 57, Berkimer Dep. 240:13–243:5.

XXII. CURRENT PROCEEDINGS

874. *On April 18, 2019, Nalco filed complaints against Defendants in these litigations.*

D.I. # 1, Nalco Company v. Wisconsin Public Service Corp., et al., 3:18-cv-279 (W.D. Wisc. Apr. 18, 2018); D.I. # 1, Nalco Company v. Wisconsin Power & Light, et al., 3:18-cv-280 (W.D. Wisc. Apr. 18, 2018).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

875. *On April 19, 2018, without prior notice to the defendants, Nalco voluntarily dismissed the Chem-Mod Case.*

Mark Decl. Ex. 132, Pl. Nalco Co.'s Notice of Voluntary Dismissal Without Prejudice, Nalco Company v. Chem-Mod LLC, 1:14-cv-02510, D.I. # 147 (N.D. Ill. Apr. 19, 2018).

Pl. Response: Undisputed.

Def. Reply: Undisputed.

876. *None of the defendants in the Chem-Mod Case or any of their affiliates paid Nalco any consideration to obtain dismissal of the Chem-Mod Case.*

*Mark Decl. Ex. 132, Pl. Nalco Co.'s Notice of Voluntary Dismissal
Without Prejudice, Nalco Company v. Chem-Mod LLC, 1:14-cv-02510,
D.I. # 147 (N.D. Ill. Apr. 19, 2018).*

Pl. Response: Undisputed.

Def. Reply: Undisputed.

Dated: May 28, 2019

Respectfully submitted,

/s/ Kristin Graham Noel

Kristin Graham Noel
Anita Boor
Quarles & Brady LLP
33 East Main Street
Suite 900
Madison, WI 53703
Telephone: 608.251.5000
Facsimile: 608.251.9166

Richard W. Mark
Joseph Evall
Paul J. Kremer
Gibson, Dunn & Crutcher LLP
200 Park Avenue
New York, NY 10166-0193
Telephone: 212.351.4000
Facsimile: 212.351.4035

Attorneys for Defendants

CERTIFICATE OF SERVICE

I hereby certify that on May 28, 2019, I caused to be electronically filed the foregoing document with the Clerk of the Court using the Court's CM/ECF system, which will send notification of such filing to all counsel of record.

/s/ Richard Mark
Richard Mark